



# LCD-Monitor

Chassis : LB522HS / LB522YS /  
LB523HS / LB524LS /  
LB524YS / LB524LS

Model : BX2250 / BX2250N /  
BX2350 / BX2450 /  
BX2450N / BX2450L

## ***SERVICE***Manual

### TFT-LCD Monitor



BX2250 / BX2250N / BX2350 /  
BX2450 / BX2450N / BX2450L

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## 3. Disassembly and Assembly



This section describes the disassembly and reassembly sequences for this monitor.

**⚠ Warning:** As this monitor has parts that are sensitive to static electricity, be careful when handling them.

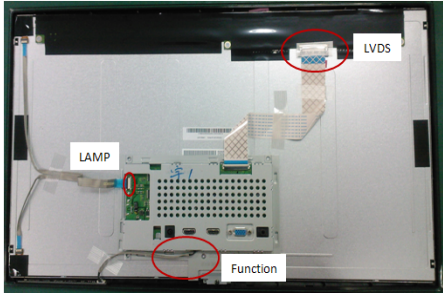






### 3-1. Disassembly

**⚠ Caution:**

1. Turn the monitor off before beginning the disassembly process.
2. When disassembling the monitor, do not use any metal tools except for the provided jig.
3. Disassemble the monitor carefully as directed in the following procedures.

Description	Photo	Screws
1. Remove the stand body shown in the figure.		
2. ① Turn the monitor over and insert your hands into the top of the monitor at the center and separate the front cover in the direction of the arrow as shown in the figure.  ② Separate the sides of the front cover up to the directed line as shown in the figure.		

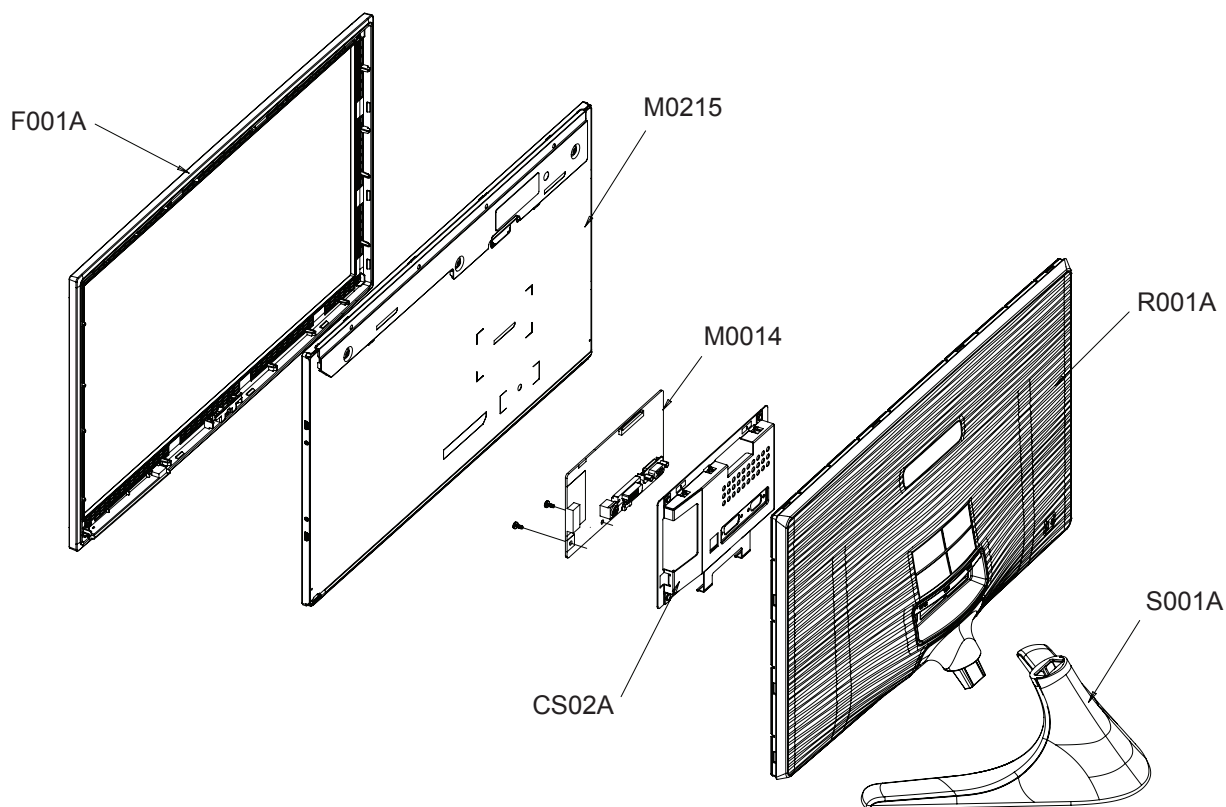
### 3. Disassembly and Assembly

Description	Photo	Screws
3. Remove the LVDS, LAMP wire, FUNCTION cable, and then remove the SHIELD-COVER.		
4. Remove the LCD panel.		
5. Remove the four (2) screws shown in the figure.		
6. Remove the five (3) screws shown in the figure and remove the Bracket support.		
7. Remove the main PCB from the SHIELD-cover.		

※ The assembly is in the reverse order of disassembly.

## 5. Exploded View & Part List

### 5-1. LS22B5HVFH/XF - Exploded View (BX2250)



#### 5-1-1. Parts List

Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
CS02A	BN96-14905C	ASSY SHIELD P-COVER;50Series 23.6",SECC,	1	SNA	
F001A	BN96-14906A	ASSY COVER P-FRONT;50Series 21.5",ABS+PM	1	SA	
M0014	BN94-03654S	ASSY PCB MAIN-ATZ;BX2250	1	SA	
M0215	BN07-00795A	LCD-PANEL;M215HW01 V6,AU21507,6bit Hi-FR	1	SA	
R001A	BN96-14923A	ASSY COVER P-REAR;50Series 21.5",ABS,HB,	1	SA	
S001A	BN96-14867A	ASSY STAND P-SET;[LM] 50 SERIES,ABS,BK23	1	SA	

**5-2. LS22B5HVFH/XF - Parts List (BX2250)**

Service Bom (SA: SERVICE AVAILABLE, SNA: SERVICE NOT AVAILABLE)

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
0.1		BN90-02842A	ASSY COVER FRONT;BX2250,BLACK,High Gloss	1	SNA	
..2	F001A	BN96-14906A	ASSY COVER P-FRONT;50Series 21.5",ABS+PM	1	SA	
...3	W392	6003-000282	SCREW-TAPTYPE;BH,+,-,B,M3,L8,ZPC(BLK),SW	1	SA	
...3		BN61-06695A	GUIDE-PANEL;50Series,SECC T1.0,6.1mm	1	SNA	
...3	CCM1	BN63-02183D	COVER-SHEET;Rhcm,PE Vinyl,T0.04,680mm,20	0.5	SNA	
...3	F001	BN63-07214A	COVER-FRONT;50Series21.5",ABS+PMMA,HB,TT	1	SNA	
...3	T0527	BN68-00798D	LABEL-ENERGY,STAR;L/M,W/W,PET,T0.05,9.3,	1	SNA	
...3	FB20A	BN96-15338B	ASSY BOARD P-TOUCH FUNCTION;BX50,CT5000-	1	SA	
....4		BN94-03856A	ASSY PCB FUNCTION-BN96-15338B;BX50,BN96-	1	SNA	
.....5	EC13	BN39-01298J	LEAD CONNECTOR;BX50,LEAD CONNECTOR,UL 10	1	SNA	
.....5		BN97-04708A	ASSY SMD-FUNCTION,BN96-15338B;BX50,BN96-	1	SNA	
.....6		0406-001253	DIODE-TVS;VESD05A1-02V,6.0/6.8/7.5V,SOD-	1	SNA	
.....6	L0405	0601-002642	LED;SMD(SIDE VIEW),BLUE,475nm,3.8x1.0x0.	1	SNA	
.....6	HDR7	2007-000139	R-CHIP;220ohm,5%,1/16W,TP,1005	6	SNA	
.....6	VC37	2203-006048	C-CER,CHIP;100nF,10%,10V,X7R,TP,1005	1	SA	
.....6	AD480	2203-006399	C-CER,CHIP;1000nF,10%,6.3V,X5R,1005	1	SA	
.....6	T0052	2703-000296	INDUCTOR-SMD;680nH,10%,1608	1	SA	
.....6	HB01A	3711-005743	HEADER-BOARD TO CABLE;BOX,5P,1R,1.25mm,A	1	SA	
.....6	IS01A	1209-001838	IC-SENSOR;CT1C08,MLF,24P,4x4mm,PLASTIC,5	1	SA	
.....6		1405-001233	VARIATOR;30Vdc,5A,1.6x0.8x0.8mm,TP	2	SA	
.....6	AR30	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	2	SA	
.....6		BN41-01522B	PCB MAIN;BX50,Func,FR-4,2,MP1.0,1.6,119x	1	SNA	
..2		BN68-03065B	LABEL-MONITOR-POP;50 POP,WW,PET,T0.05,90	1	SNA	
0.1	R001A	BN90-02843B	ASSY COVER REAR;BX2250,BLACK,21.5	1	SNA	
..2	R001A	BN96-14923A	ASSY COVER P-REAR;50Series 21.5",ABS,HB,	1	SA	
...3	M0081	6003-001239	SCREW-TAPTYPE;FH,+,-,B,M4,L10,ZPC(WHT),S WR	2	SNA	
...3		BN61-06702A	HOLDER-STAND;[LM] 50 SERIES,POM,WHITE,AC	1	SNA	
...3	ES02	BN61-06703A	SPRING ETC;[LM] 50 SERIES,SK5,0.6,BLACKE	1	SNA	
...3	SC05	BN63-07212A	COVER-STAND;[LM] 50 SERIES,ABS,HB,BK23,E	1	SNA	
...3	R001	BN63-07217A	COVER-REAR;50Series21.5",ABS,HB	1	SNA	
0.1		BN91-04714A	ASSY LCD-ATZ;BX2240	1	SNA	
..2	M0215	BN07-00795A	LCD-PANEL;M215HW01 V6,AU21507,6bit Hi-FR	1	SA	
0.1	M0017	BN91-05827C	ASSY CHASSIS;BX2250	1	SNA	
..2	M0081	6003-000264	SCREW-TAPTYPE;PWH,+,-,B,M3,L6,ZPC(WHT),S	3	SA	
..2	M0014	BN94-03654S	ASSY PCB MAIN-ATZ;BX2250	1	SA	
...3		0202-001463	SOLDER-WIRE;LFC2-W3.0,-,D3,99.79Sn/0.2Cu	1.814	SNA	
...3		0202-001608	SOLDER-WIRE FLUX;LFC7-107,D0.8,99.3Sn/0.	0.233	SNA	
...3		0204-002420	SOLVENT;1M-1000,C3H70H,96	3.47	SNA	
...3		0204-002607	FLUX;DF-234U,13%,14KG,Gravity 0.82	2.259	SNA	

## 5. Exploded View &amp; Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
...3	AAE13	2401-000842	C-AL;220uF,20%,25V,WT,TP,8x11.5,5	1	SA	
...3	C	2401-001218	C-AL;4.7uF,20%,100V,WT,TP,5x11,5	1	SA	
...3		3701-001510	CONNECTOR-DSUB;15P,3R,FEMAIL,STAMPED PIN	1	SNA	
...3	JA330	3722-002758	JACK-PHONE;1P,BLK,STRAIGHT	1	SA	
...3		3722-002922	JACK-DC POWER;3P,6.7mm,SnPb,Black	1	SNA	
...3		BN97-00707A	ASSY HDCP;BN46-00018A,BR20/21BS_CS,MSTAR	1	SNA	
....4		BN46-00018A	KEY CODE-CERTIFICATE;(HDCP KEY) PPM42M5S,	1	SNA	
...3		BN97-04471S	ASSY SMD;BX2250,BN94-03654*	1	SNA	
....4		0202-001477	SOLDER-CREAM;LST309-M,D20~45um,96.5Sn/3A	0.462	SNA	
....4	HD7	0401-000008	DIODE-SWITCHING;DAN217,80V,100MA,SOT-23,	4	SA	
....4	DS01A	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	3	SA	
....4	DR01A	0402-001614	DIODE-RECTIFIER;S1G,400V,1A,DO-214AC,TP	2	SA	
....4		0403-001180	DIODE-ZENER;BZX84C6V2,5.8-6.6V,350mW,SOT	5	SA	
....4	MZD1	0403-001411	DIODE-ZENER;5.49-5.73V,200mW,SOD-323,TP	6	SA	
....4		0403-001712	DIODE-ZENER;QZX363C6V8,6.47/7.14V,200mW,	1	SNA	
....4	D0254	0404-001020	DIODE-SCHOTTKY;BAT54C,30V,200mA,SOT-23,T	2	SA	
....4	D0254	0404-001307	DIODE-SCHOTTKY;SSC54,20V,5000mA,DO-214AB	1	SA	
....4	T0139	0406-001271	DIODE-TVS;RCLAMP0524P,6/-V,150W,SLP251	4	SNA	
....4	Q101	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	3	SA	
....4		0501-002654	TR-SMALL SIGNAL;2PD601ASL,NPN,250mW,SOT-	6	SA	
....4		0505-001089	FET-SILICON;AO3409L,P,-30V,-2.6A,0.097/0	1	SA	
....4		0505-002421	FET-SILICON;AOD464,N,105V,40A,28mohm,100	1	SA	
....4	Q409	0505-002560	FET-SILICON;AO6415,P,-20V,-3.3A,0.15ohm,	2	SA	
....4	IC112	1103-000129	IC-EEPROM;24C02,2Kbit,256x8,SOP,8P,5x4mm	1	SA	
....4	IC112	1103-001310	IC-EEPROM;24LC02B,256X8BIT,SOIC,8P,3.91X	2	SNA	
....4	IC112	1103-001410	IC-EEPROM;S-24CS08AFJ-TB-1GE,8Kbit,1Kx8,	1	SNA	
....4	T0085	1201-002487	IC-AUDIO AMP;MAX9728A,QFN,12P,3x3mm,DUAL	1	SA	
....4	T0170	1203-003059	IC-SWITCH VOL. REG.;MP1583,SOIC,8P,4.9x3	1	SA	
....4	T0087	1203-006118	IC-POSI.FIXED REG.;S-1172B18-U5T1G,SOT-8	1	SA	
....4	T0087	1203-006141	IC-POSI.FIXED REG.;S-1172B33-U5T1G,SOT-8	1	SA	
....4		1203-006294	IC-BACKLIGHT DRIVER;MP3389EF,TSSOP,28P,9	2	SA	
....4	IC109	1205-003964	IC-LCD CONTROLLER;SE979LMRD-LF,PQFP,128P	1	SA	
....4		1405-001233	VARISTOR;30Vdc,5A,1.6x0.8x0.8mm,TP	2	SA	
....4	DR1	2007-000043	R-CHIP;1Kohm,1%,1/10W,TP,1608	1	SA	
....4	PR4	2007-000052	R-CHIP;10Kohm,1%,1/10W,TP,1608	2	SA	
....4	KAR13	2007-000060	R-CHIP;100Kohm,1%,1/10W,TP,1608	3	SNA	
....4	KAR21	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	9	SA	
....4	CER02	2007-000071	R-CHIP;22ohm,5%,1/10W,TP,1608	2	SA	
....4	AR30	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608	8	SA	
....4	FMR4	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608	2	SNA	
....4	CER04	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	3	SA	

## 5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4	MROP1	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	2	SA	
....4	ARR2	2007-000102	R-CHIP;100Kohm,5%,1/10W,TP,1608	2	SA	
....4	DR10	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608	1	SA	
....4	KAR11	2007-000124	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	1	SNA	
....4	MR604	2007-000137	R-CHIP;2Kohm,5%,1/16W,TP,1005	2	SNA	
....4	R105	2007-000138	R-CHIP;100ohm,5%,1/16W,TP,1005	11	SA	
....4	AR49	2007-000140	R-CHIP;1Kohm,5%,1/16W,TP,1005	2	SNA	
....4	R319	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	12	SNA	
....4	PR27	2007-000144	R-CHIP;5.1Kohm,5%,1/16W,TP,1005	1	SNA	
....4	R104	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	19	SA	
....4	MR13	2007-000157	R-CHIP;47Kohm,5%,1/16W,TP,1005	6	SNA	
....4	DR39	2007-000162	R-CHIP;100Kohm,5%,1/16W,TP,1005	6	SNA	
....4	HDR17	2007-000172	R-CHIP;10ohm,5%,1/16W,TP,1005	18	SNA	
....4		2007-000563	R-CHIP;220Kohm,1%,1/10W,TP,1608	2	SA	
....4		2007-000633	R-CHIP;270Kohm,1%,1/10W,TP,1608	2	SA	
....4		2007-000736	R-CHIP;30Kohm,1%,1/10W,TP,1608	2	SA	
....4	HR13	2007-000821	R-CHIP;390ohm,1%,1/10W,TP,1608	1	SNA	
....4	V8932	2007-000857	R-CHIP;4.3Kohm,1%,1/10W,TP,1608	2	SNA	
....4	R3508	2007-001038	R-CHIP;56Kohm,1%,1/10W,TP,1608	2	SA	
....4		2007-001135	R-CHIP;68ohm,5%,1/4W,TP,3216	2	SA	
....4	ZR10	2007-001164	R-CHIP;75ohm,1%,1/10W,TP,1608	3	SA	
....4	OTR1	2007-001292	R-CHIP;33ohm,5%,1/16W,TP,1005	5	SNA	
....4	AVR63	2007-001323	R-CHIP;3Kohm,5%,1/16W,TP,1005	2	SA	
....4		2007-007132	R-CHIP;15Kohm,1%,1/16W,TP,1005	3	SA	
....4		2007-007136	R-CHIP;4.7Kohm,1%,1/16W,TP,1005	1	SNA	
....4		2007-007319	R-CHIP;390ohm,1%,1/16W,TP,1005	1	SNA	
....4		2007-007463	R-CHIP;1.1Kohm,1%,1/16W,TP,1005	2	SA	
....4		2007-009923	R-CHIP;0.3ohm,1%,1/4W,TP,3216	3	SNA	
....4	C258	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	5	SA	
....4	C409	2203-000292	C-CER,CHIP;0.01nF,5%,50V,C0G,1608	2	SA	
....4	C212	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608	4	SA	
....4	AD480	2203-000585	C-CER,CHIP;0.22nF,10%,50V,X7R,1005	2	SA	
....4	ZC14	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608	1	SNA	
....4	AD480	2203-002285	C-CER,CHIP;10nF,10%,50V,X7R,1005	1	SNA	
....4	AD480	2203-002720	C-CER,CHIP;10nF,10%,25V,X7R,TP,1005	5	SNA	
....4	DC108	2203-005005	C-CER,CHIP;100nF,10%,16V,X7R,1608	4	SC	
....4	AAC1	2203-005249	C-CER,CHIP;100nF,10%,50V,X7R,TP,1608	1	SNA	
....4	PC8	2203-005642	C-CER,CHIP;0.22nF,5%,50V,NP0,1005	2	SNA	
....4	PC11	2203-006141	C-CER,CHIP;1000nF,10%,16V,X5R,1608	9	SNA	
....4	C102	2203-006158	C-CER,CHIP;100nF,10%,16V,X7R,1005	36	SNA	
....4	AD480	2203-006336	C-CER,CHIP;10000nF,10%,25V,X5R,3216	8	SA	
....4	C234	2203-006378	C-CER,CHIP;4700nF,10%,6.3V,X5R,TP,1608	1	SNA	
....4	AD480	2203-006698	C-CER,CHIP;1000nF,10%,25V,X7R,1608	2	SNA	
....4	AD480	2203-007270	C-CER,CHIP;10000nF,10%,10V,X5R,TP,1608	26	SNA	
....4	X202	2801-003667	CRYSTAL-SMD;14.31818MHz,30ppm,28-AAN,16p	1	SA	
....4	L2011	3301-001145	BEAD-SMD;60ohm,4516,TP,70ohm/45MHz,82ohm	6	SNA	
....4	T0568	3301-001176	BEAD-SMD;80ohm,2012,TP,-,-	3	SNA	
....4	T0568	3301-001407	BEAD-SMD;30ohm,1608,300mA,TP,,,0.4ohm	2	SNA	

## 5. Exploded View &amp; Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
....4		3601-001038	FUSE-SURFACE MOUNT;125V,3A,FAST-ACTING,C	1	SA	
....4	AC510	3708-001150	CONNECTOR-FPC/FFC/PIC;30P,1mm,SMD-A,SN,Y	1	SA	
....4	AC510	3708-001779	CONNECTOR-FPC/FFC/PIC;20P,0.5mm,SMD-A,Au	1	SNA	
....4	HB01A	3711-005743	HEADER-BOARD TO CABLE;BOX,5P,1R,1.25mm,A	1	SA	
....4	T0010	BN27-00007A	COIL CHOKE-SMD;DHB0504-100,RB15/17NS,10u	1	SA	
....4	T0010	BN27-00009A	COIL CHOKE;SMD 12x12x6,EOS,33uH,15%,0.12	1	SA	
....4		BN41-01483A	PCB MAIN;50series 1analog+2hdmi,FR-4,2,M	1	SNA	
....4		BN97-04543C	ASSY MICOM;m-B522H0CLA-1002.1,2010.05.25	1	SNA	
.....5		1107-001938	IC-FLASH MEMORY;W25X40BVSSIG,4Mbit,SOP,8	1	SNA	
....4		3701-001591	CONNECTOR-HDMI;19P,2ROW,FEMALE,SMD-S,AU	2	SNA	
....4		2703-003866	INDUCTOR-SMD;22uH,20%,10.5x10.5mm	1	SA	
....4		0404-001595	DIODE-SCHOTTKY;B2100,100V,2000mA,SMB,TP	1	SA	
....4	AAR11	2007-000312	R-CHIP;10ohm,5%,1/4W,TP,3216	1	SA	
....4	ER19	2007-002899	R-CHIP;10ohm,1%,1/10W,TP,1608	1	SA	
....4	AD480	2203-007602	C-CER,CHIP;2200nF,10%,100V,X7R,TP,3225	1	SA	
....4	WR15B	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608	2	SA	
....4	C3	2203-000384	C-CER,CHIP;0.015nF,5%,50V,C0G,1608	1	SNA	
....4	AAC14	2203-000888	C-CER,CHIP;4.7nF,10%,50V,X7R,TP,1608	6	SA	
....4		1405-001185	VARISTOR;24Vdc,1.6x0.8x0.36mm,TP	2	SA	
...3		0201-001059	ADHESIVE-SIL;#9590,WHT,CARTRIGE	0.001	SNA	
..2	CS02A	BN96-14905C	ASSY SHIELD P-COVER;50Series 23.6",SECC,	1	SNA	
...3	CB02	BN61-06624A	BRACKET-FRAME;50Series 24",SECC,T0.8	1	SNA	
...3		BN63-07206C	SHIELD-MAIN;50Series23.6",SECC,T0.8,HDMI	1	SNA	
...3	T0073	AA63-01110C	GASKET-EMI;42D5,1.0,10,22,45Kg/m2,Fabric	1	SNA	
...3	M0131	AA63-01134A	GASKET;JD26KO,Conductive Fabric,10mm,1.5	1	SNA	
...3		BN60-00231A	SPACER-FELT;FELT,15,BLK,T0.3,15	2	SNA	
..2	FL06	BN96-12453J	ASSY CABLE P-FFC;50Series,LVDS CABLE,P10	1	SA	
..2	CIS1	BN74-00021A	TAPE-FILAMENT;Filament tape,clear,#8915,	0.06	SNA	
0.1		BN91-05829A	ASSY SHIELD;BX2250N	1	SNA	
..2	CIS1	BN74-00021A	TAPE-FILAMENT;Filament tape,clear,#8915,	0.3	SNA	
..2	FL06	BN96-13895D	ASSY CABLE P-FFC;Cobalt,FFC CABLE,JPC-S0	1	SA	
0.1		BN92-05486K	ASSY LABEL;BX50	1	SNA	
..2	CCM1	BN68-01570A	LABEL RATING;ALL,SS,PE,T0.05,90,45,Dark	1	SNA	
0.1		BN92-06358G	ASSY BOX;BX2250,LS22B5HVFH/XF	1	SNA	
..2	T0077	BH68-00329D	LABEL BAR CODE-02;NO CE,NO WT`Y,MPRII,LA	1	SNA	
..2		BH68-00651R	LABEL BOX-00;ALL MODEL,MOJO 90G,90,95,WH	1	SNA	
..2		BN68-02882T	LABEL-STICKER;MODEL 15,CHINA,MOJO,80G,54	1	SNA	
..2		BN69-05258A	BOX-01,SET;Series 50 21.5",PAPER,SW,A1,Y	2	SNA	
..2	M0245	BN96-02895A	ASSY MISC P-01,HANDLE PACKING;ALL MODEL,	1	SNA	
...3		BN66-00007A	LEVER-TOP;ALL MODEL,LDPE,WHITE,5.8g	1	SNA	
...3		BN66-00008A	LEVER-BOTTOM;ALL MODEL,LDPE,WHITE,4.01g	1	SNA	
0.1	ACCE1	BN92-06359F	ASSY ACCESSORY;LS22B5HVFH/XF	1	SNA	

## 5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
..2	EC29	BN39-00244H	CBF SIGNAL-D-SUB TO D-SUB;D-sub cable,15	1	SA	
..2	M0158	BN44-00139C	DC VSS(A);AD-3612S,WHITE,110/230V,50/60H	1	SA	
...3		BN81-00713A	A/S-DIODE-RECTIFIER;0402-000602,-,-,-,-,-	1	SNA	
...3		BN81-00944A	A/S-FUSE-AXIAL LEAD;3601-001301,-,-,-,-,-	1	SNA	
...3		BN81-00951A	A/S-WIRE-NO SHEATH CU;3811-000545,-,-,-,-,-	1	SNA	
...3		BN81-00955A	A/S-EYELET;6042-001007,-,-,-,-,-	1	SNA	
...3		BN81-00970A	A/S-COIL-LFT;ML27-00096A,-,-,-,-,-	1	SNA	
...3		BN81-01058A	A/S-SOLDER-WIRE FLUX;0202-001253	1	SNA	
...3		BN81-01060A	A/S-GREASA-SILIWNE;ML74-00120A	0.1	SNA	
...3		BN81-01061A	A/S-FLUX;0204-002413	0.2	SNA	
...3		BN81-01062A	A/S-ADHESIVE-ANB;0201-000215	0.01	SNA	
...3		BN81-01102A	A/S-SOLDER-WIRE;0202-001547	1	SNA	
...3		BN81-01104A	A/S-SOLDER-WIRE;0202-001594	1	SNA	
...3		BN81-01158A	A/S-R-CHIP;2007-008126	3	SNA	
...3		BN81-01159A	A/S-R-CHIP;2007-008828	1	SNA	
...3		BN81-01160A	A/S-R-CHIP;2007-008832	1	SNA	
...3		BN81-01161A	A/S-R-CHIP;2007-008836	1	SNA	
...3		BN81-01163A	A/S-R-CHIP;2007-008840	2	SNA	
...3		BN81-01177A	A/S-R-CHIP;2007-009656	1	SNA	
...3		BN81-01430A	A/S-LABEL;ML68-02001Q,-,-,-,-,-	1	SNA	
...3		BN81-01526A	A/S-CAPACITOR-MLCC;ML59-00006G,-,-,-,-,-	1	SNA	
...3		BN81-01626A	A/S-R-CHIP;2007-009671,-,-,-,-,-	1	SNA	
...3		BN81-02563A	A/S-R-CHIP;2007-008925	1	SNA	
...3		BN81-02613A	A/S-BEAD-AXIAL;3301-001982	1	SNA	
...3		BN81-02900A	A/S-ADHESIVE-SL;0201-002112	0.006	SNA	
...3		BN81-02901A	A/S-SOLDER BAR;0202-001695	2.4	SNA	
...3		BN81-02902A	A/S-SOLDER WIRE;0202-001703	0.001	SNA	
...3		BN81-02921A	A/S-MLCC-CHIP;ML59-00005T	2	SNA	
...3		BN81-03067A	A/S-BAR CODE LABEL;ML68-00582L	1	SNA	
...3		BN81-03176A	A/S-SOLDER-BAR;0202-001692	2.4	SNA	
...3		BN81-03177A	A/S-SOLDER-BAR;0202-001693	2.4	SNA	
...3		BN81-03178A	A/S-SOLDER-WIRE;0202-001696	0.001	SNA	
...3		BN81-03179A	A/S-SOLDER-BAR;0202-001697	2.4	SNA	
...3		BN81-03333A	A/S-TUBE-TEFRON TUBE;ML62-00231A	0.02	SNA	
...3		BN81-04632A	A/S-DIODE ZENER;0403-001775	1	SNA	
...3		BN81-05360A	A/S-ADHESIVE-SIL;0201-001941	6	SNA	
...3		BN81-05361A	A/S-ADHESIVE-SL;0201-002214	6	SNA	
...3		BN81-05434A	A/S-BOX-OUT;ML69-00397Y	1	SNA	
...3		BN81-05435A	A/S-C-AL;2401-004694	2	SNA	
...3		BN81-05436A	A/S-C-AL;2401-004695	1	SNA	
...3		BN81-05437A	A/S-C-AL;2401-004700	2	SNA	
...3		BN81-05441A	A/S-C-CER,CHIP;2203-005135	1	SNA	
...3		BN81-05442A	A/S-C-CER,CHIP;2203-006428	1	SNA	
...3		BN81-05443A	A/S-C-CER,CHIP;2203-006596	1	SNA	
...3		BN81-05444A	A/S-C-CER,CHIP;2203-007466	1	SNA	
...3		BN81-05446A	A/S-C-CERAMIC,DISC;2201-002379	1	SNA	
...3		BN81-05448A	A/S-C-FILM,LEAD;2301-001975	1	SNA	
...3		BN81-05450A	A/S-CHIP-R;ML01-00025H	1	SNA	
...3		BN81-05451A	A/S-COIL CHOKE;ML27-00418N	1	SNA	
...3		BN81-05454A	A/S-COIL FILTER-LINE;ML27-00429D	1	SNA	
...3		BN81-05455A	A/S-DIODE-BRIDGE;0402-001821	1	SNA	

## 5. Exploded View &amp; Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
...3		BN81-05456A	A/S-DIODE-RECTIFIER;0402-001741	1	SNA	
...3		BN81-05458A	A/S-DIODE-SCHOTTKY;0404-001539	1	SNA	
...3		BN81-05460A	A/S-DIODE-TVS;0406-001396	1	SNA	
...3		BN81-05463A	A/S-DIODE-ZENER;0403-001796	1	SNA	
...3		BN81-05465A	A/S-IC-POS1.ADJUST REG.;1203-005361	1	SNA	
...3		BN81-05467A	A/S-IC-PWM CONTROLLER;1203-006085	1	SNA	
...3		BN81-05468A	A/S-PACKING-VINYL BAG;ML69-00382F	1	SNA	
...3		BN81-05469A	A/S-PAD-CROSS (A);ML69-00400T	1	SNA	
...3		BN81-05470A	A/S-PAD-CROSS (B);ML69-00400S	1	SNA	
...3		BN81-05471A	A/S-PAD-NIL;ML69-00398Y	1	SNA	
...3	M0014	BN81-05473A	A/S-PCB;ML41-00415Y	1	SNA	
...3		BN81-05475A	A/S-PHOTO-COUPLER;0604-001294	1	SNA	
...3		BN81-05481A	A/S-R-CHIP;2007-008871	1	SNA	
...3		BN81-05482A	A/S-R-CHIP;2007-009733	3	SNA	
...3		BN81-05483A	A/S-R-CHIP;2007-009840	1	SNA	
...3		BN81-05485A	A/S-THERMISTOR-NTC;1404-001552	1	SNA	
...3		BN81-05488A	A/S-TRANS-POWER S/W;ML26-00403U	1	SNA	
...3		BN81-05490A	A/S-VARISTOR;1405-001278	1	SNA	
...3		BN81-05491A	A/S-CHIP-R;ML01-00024A	2	SNA	
...3		BN81-05492A	A/S-CAPACITOR-MLCC;ML59-00009Q	4	SNA	
...3		BN81-05552A	A/S-SCREW-MACHINE;6001-001863	1	SNA	
...3		BN81-05553A	A/S-NUT-HEXAGON;6021-000139	1	SNA	
...3		BN81-05554A	A/S-DC POWER CABLE;ML39-00603M	1	SNA	
...3		BN81-05555A	A/S-DC POWER CABLE;ML39-00603L	1	SNA	
...3		BN81-05556A	A/S-HARNESS SOCKET-ASSY INLET;ML39-00607	1	SNA	
...3		BN81-05557A	A/S-HARNESS SOCKET-ASSY INLET;ML39-00607	1	SNA	
...3		BN81-05558A	A/S-CASE-BOTTOM;ML61-00158A	1	SNA	
...3		BN81-05559A	A/S-CASE-COVER;ML61-00158B	1	SNA	
...3		BN81-05560A	A/S-SUPPORT-SPACER;ML61-00159B	3	SNA	
...3		BN81-05561A	A/S-PAD GAP #1;ML62-00270N	1	SNA	
...3		BN81-05562A	A/S-PAD GAP #2;ML62-00270P	1	SNA	
...3		BN81-05563A	A/S-PAD GAP #3;ML62-00270Q	1	SNA	
...3		BN81-05564A	A/S-HEAT SINK #2;ML62-00293H	1	SNA	
...3		BN81-05565A	A/S-HEAT SINK #1;ML62-00293K	1	SNA	
...3		BN81-05566A	A/S-SHIELD-COVER;ML63-00022F	1	SNA	
...3		BN81-05567A	A/S-SHIELD-BOTTOM;ML63-00022G	1	SNA	
...3		BN81-05568A	A/S-LABEL RATING;ML68-00592D	1	SNA	
...3		BN81-05569A	A/S-TAPE ETC;ML02-00006H	0.12	SNA	
...3		BN81-05570A	A/S-TAPE ETC;ML02-00006J	1	SNA	
..2	S001A	BN96-14867A	ASSY STAND P-SET;[LM] 50 SERIES,ABS,BK23	1	SA	
...3	M0081	6003-001001	SCREW-TAPTYPE;FH,+,B,M3,L8,ZPC(BLK),SW RC	2	SNA	
...3	M0081	6003-001019	SCREW-TAPTYPE;RH,+,B,M4,L12,ZPC(BLK),S WR	2	SNA	
...3		BN61-06627A	BRACKET-STAND BODY;[LM] 50 SERIES,SECC,T	1	SNA	
...3		BN61-06676A	BRACKET-STAND BASE;[LM] 50 SERIES [18.5]	1	SNA	
...3		BN63-07262A	COVER-STAND FRONT;[LM] 50 SERIES [18.5-2	1	SNA	
...3	AR011	BN73-00077A	RUBBER FOOT;MATISSE,BUMPON,#13.5,T2.0 ,60	4	SNA	

## 5. Exploded View & Part List

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
...3	M0081	6003-000131	SCREW-TAPTYPE;BH,+,S,M4,L6,ZPC(BLK),SW RC	4	SNA	
...3	T0524	6902-000389	BAG PE;HDPE/NITRON/HDPE,T0.015/T0.5/T0.0	1	SNA	
...3		AA63-60131Z	SPACER-FELT;35/50 LCD-MONITOR,felt,16,bl	4	SNA	
...3		BN63-07263B	COVER-STAND REAR;[LM] 35/50 SERIES [18.5	1	SNA	
...3		BN68-03045B	LABEL-STICKER;[50 series][18.5-21.5],W/W	1	SNA	
...3		BN68-03048A	LABEL-WARNING;50SERIES,ALL,PE,T0.05,16,4	1	SNA	
...3	M0081	6003-001010	SCREW-TAPTYPE;FH,+,B,M3,L6,ZPC(WHT),S WRC	4	SNA	
...3		AA60-00189A	SPACER-FELT;35/50 LCD-MONITOR,felt,L30,b	1	SNA	
..2	ACCE1	BN96-14911F	ASSY ACCESSORY;LS22B5HVFH/XF	1	SNA	
...3	T0268	3903-000381	CBF-POWER CORD;DT,CHINA,LSG- 21,250/250V,	1	SA	
...3	T0524	6902-000110	BAG PE;LDPE,T0.05,W250,L400,TRP,28,2,9.2	1	SNA	
...3	T0527	AA68-00764A	LABEL-PASSING;SAMSUNG ALL,ART PAPER,CLR,	1	SNA	
...3	M9889	BN63-02368B	CLOTH-CLEAN;cloth,120,160,sea blue,ToC	1	SNA	
...3	T0527	BN68-00513A	LABEL-E,PASS;ALL MODEL,YUPO(110G),50X15,	1	SNA	
...3		BN68-01789A	MANUAL FLYER-WARRANTY CARD;Chinese,Art 1	1	SNA	
...3		BN68-02975A	MANUAL FLYER-CHINA;50SERIES,SyncMaster,C	1	SNA	
..2		BN39-01353A	CBF SIGNAL-HDMI-DVI CABLE;HDMI-DVI cable	1	SA	
0.1		BN92-06360A	ASSY P/MATERIAL;S22AJ,W/W	1	SNA	
..2	T0214	0203-001595	TAPE-OPP MASKING;OPP-2,0.075,75,800M,CLR	1.68	SNA	
..2		6902-000061	BAG AIR;LDPE,T0.2,W500,L1000,TRP,370.000	1	SNA	
..2		6902-000379	BAG AIR;LDPE,T0.2,W1000,L1800,TRP,1260.0	1	SNA	
..2		6902-000604	BAG WRAPPING;LDPE,T0.02,W500,L10000,TRP,	2.5	SNA	
..2		6902-000609	BAG ROLL;LDPE,T0.05,W2400,L1000,TRP,30.0	0.02	SNA	
..2		AA69-03227K	PAD-PLATE;CB SW-2,1285,785	1	SNA	
..2	T0527	BH68-40364A	LABEL-SUMMARY;G52,G72,ART,100G,WHT,BL K,W	1	SNA	
..2		BH69-00457F	PACKING INNER-PAD;ALL MODEL,EPE,SHEET,W1	1	SNA	
..2	T0527	BN68-00129A	LABEL SHIPPING-00;LABEL SHIPPING,ART-PAP	1	SNA	
..2		BN69-00391P	PAD-ANGLE;OTHER,T4,50,2200,YEL	1	SNA	
..2		BN69-00577B	PALLET;DS17BS,WOOD,1390,790,120	1	SNA	
..2		BN69-05155A	CUSHION-SET;50Series21.5W,EPS,EPS,T0.018	1	SNA	
..2	T0524	6902-001067	BAG PE;HDPE/NITRON,T0.015/T0.5,W700,L600	1	SNA	

# 1. Precautions

## 1-1. Safety Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

### 1-1-1. Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC power jack before servicing.

### 1-1-2. Servicing the LCD Monitor

1. When servicing the LCD Monitor, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

### 1-1-3. Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor/capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):

**WARNING :** Do not use an isolation transformer during this test.

Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

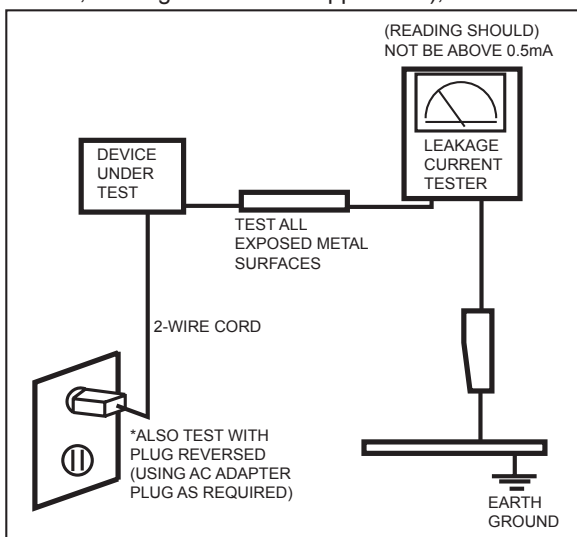


Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

### 1-1-4. Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

## 1-2. Servicing Precautions

**WARNING:** An electrolytic capacitor installed with the wrong polarity might explode.

**Caution:** Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

**Note:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

### 1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:  
(a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug. The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

### 1-3. Static Electricity Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.  
**Caution:** Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

## **1-4. Installation Precautions**

1. For safety reasons, more than two people are required for carrying the product.
2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the highvoltage cable or the antenna falling over may cause fire or electric shock.
7. When installing the product, leave enough space (10cm) between the product and the wall for ventilation purposes. A rise in temperature within the product may cause fire.

Memo

## 2. Product specifications


### 2-1. Feature & Specifications

Model	BX2250 / BX2250N / BX2350 / BX2450 / BX2450N / BX2450L		
Feature			
<ul style="list-style-type: none"><li>▶ Panel Specifications: 250 cd/m2, 2 ms, CR MEGA:1, 170/160 (CR&gt;10)</li><li>▶ DPMS : &lt;0.3W</li><li>▶ Off-Timer function for reducing standby power usages</li><li>▶ Windows Vista/Windows 7 authentication</li><li>▶ HDMI with HDCP</li><li>▶ Picture;a screen size desire</li><li>▶ Supported Color Effect: Off/Grayscale/Green/Aqua/Sepia</li><li>▶ Supported Magic Bright3/ Picture Mode/Magic Eco/Magic Angle/Magic Return off timer/Image Size/Color Effect</li></ul>			
Specifications			
Item	Description		
Model	BX2250	BX2250N	BX2350
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally white transmissive,		
	21.5" Wide viewable, 0.24825(H) x 0.24825(V)		23" Wide viewable, 0.2655(H) x 0.2655(V)
Scanning Frequency	Horizontal : 30kHz~81kHz Vertical: 56 Hz ~ 75 Hz		
Display Colors	16.7 Million colors		
Maximum resolution	Horizontal: 1920 Pixels Vertical: 1080 Pixels		
Input Signal	Analog / 2 x HDMI with HDCP	Analog	Analog / 2 x HDMI with HDCP
Input Sync Signal	Seperate H/V sync, Composite H/V, Sync-on-Green Level: TTL level		
Maximum Pixel Clock rate	164 Mhz		
Active Display (Horizontal/Vertical)	476.64(H) x 268.11(V)		509.76(H) x 286.74(V)
AC power voltage & Frequency	AC 110V~130V, 60Hz & AC, 200V~240V 50Hz		
Power Consumption	MAX26W / Typ 22W		MAX33W / Typ30W
Dimensions Set (W x D x H)	520.1 x 329 x 67.54 mm (Without Stand)		555.3 x 348.4 x 67.54 mm (Without Stand)
Weight (Product/Shipment weight)	3.4kg / 5kg	3.4kg / 4.9kg	3.7kg / 5.5kg
Environmental Considerations	Operating Temperature: 10°C ~ 50°C(50°F ~ 122°F) Operating Humidity : 10% ~ 90% Operating Temperature: -20°C ~ 45°C(-4°F ~ 113°F) Operating Humidity: 5% ~ 90%		
Note: Designs and specifications are subject to change without prior notice.			

## 2. Product specifications

Specifications			
Item	Description		
Model	BX2450	BX2450N	BX2450L
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally white transmissive,		
	24" Wide viewable, 0.27675(H) x 0.27675(V)		23.6" Wide viewable, 0.2715(H) x 0.2715(V)
Scanning Frequency	Horizontal : 30kHz~81kHz Vertical: 56 Hz ~ 75 Hz		
Display Colors	16.7 Million colors		
Maximum resolution	Horizontal: 1920 Pixels Vertical: 1080 Pixels		
Input Signal	Analog / 2 x HDMI with HDCP	Analog	Analog / 2 x HDMI with HDCP
Input Sync Signal	Seperate H/V sync, Composite H/V, Sync-on-Green Level: TTL level		
Maximum Pixel Clock rate	164 Mhz		
Active Display (Horizontal/Vertical)	531.36(H) x 298.89(V)		521.28(H) x 293.22(V)
AC power voltage & Frequency	AC 110V~130V, 60Hz & AC, 200V~240V 50Hz		
Power Consumption	MAX30W / Typ 27W		
Dimensions Set (W x D x H)	577.3 x 350.4 x 67.54 mm (Without Stand)		577.3 x 350.4 x 67.54 mm (Without Stand)
Weight (Product/Shipment weight)	4kg / 5.8kg	4kg / 5.7kg	4.3kg / 6.1kg
Environmental Considerations	Operating Temperature: 10°C ~ 50°C(50°F ~ 122°F) Operating Humidity : 10% ~ 90% Operating Temperature: -20°C ~ 45°C(-4°F ~ 113°F) Operating Humidity: 5% ~ 90%		
Note: Designs and specifications are subject to change without prior notice.			

## 2-2. Spec Comparison to the Old Models

Model	50series (BX2250 / BX2250N / BX2350 / BX2450 / BX2450N / BX2450L)	White (PX2370)
Design		
Resolution	1920x1080	1920x1080
Input	Analog / HDMI with HDCP	Digital with HDCP/HDMI with HDCP
Response Time	2ms(G to G)	2ms(G to G)
Viewing Angle	170/160(CR>10)	170/160(CR>10)
Brightness	250 cd/m <sup>2</sup>	250 cd/m <sup>2</sup>
Contrast	MEGA:1(DCR)	MEGA:1(DCR)
MagicBright	3 step	4 step
Feature	MagicAngle Image Size Magic Bright3 Picture Mode Magic Tune Magic ECO Magic Return Win7	Magic Bright Magiclux MagicECO MagicReturn MagicAngle

### \*Color Effect

- Grey scale: Images are displayed in a grey tone on the screen.
- Green: Images are displayed in a green tone on the screen.
- Aqua: Images are displayed in a blue tone on the screen.
- Sepia: Images are displayed in a brown tone on the screen.

Image Size : If the resolution is not wide resolution, this option allows the screen size to be selected as normal or wide.


## 2-3. Accessories

Product	Description	Code. No	Remark
	Quick Setup Guide	BN68-02964A	Samsung Electronics Service center
	Product Warranty (Not available in all locations)	BH68-00261F	
	User Manual	BN59-01093A	
	D-Sub Cable	BN39-00244H	
	HDMI to DVI Cable	BN39-01353A	
	Power Cord	3903-000192	
	DC-Adapter	BN44-00139C	
	Cleaning Cloth	BN63-02368B	
	Stand	BN96-14867A	

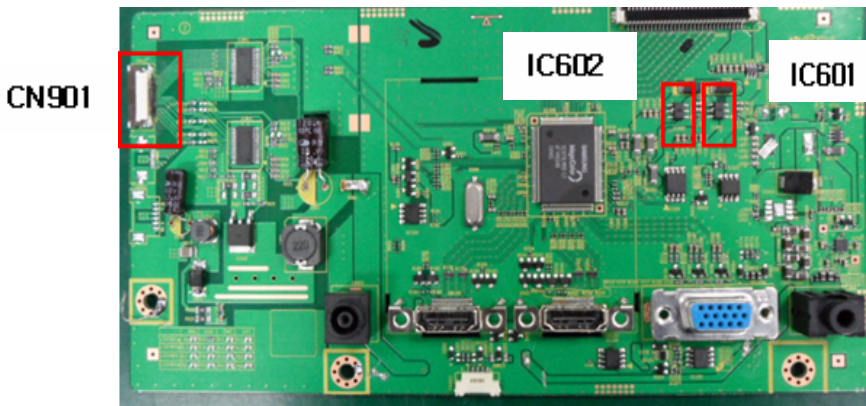
## 4. Troubleshooting

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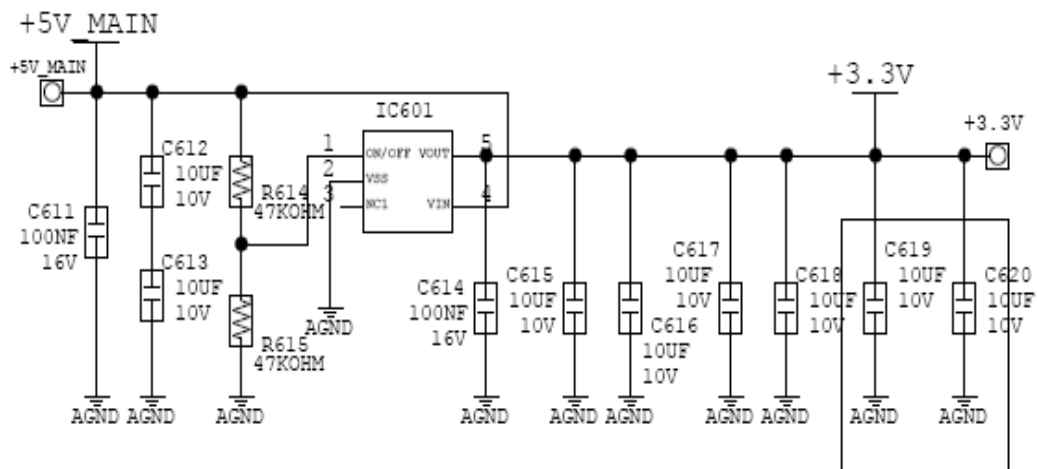
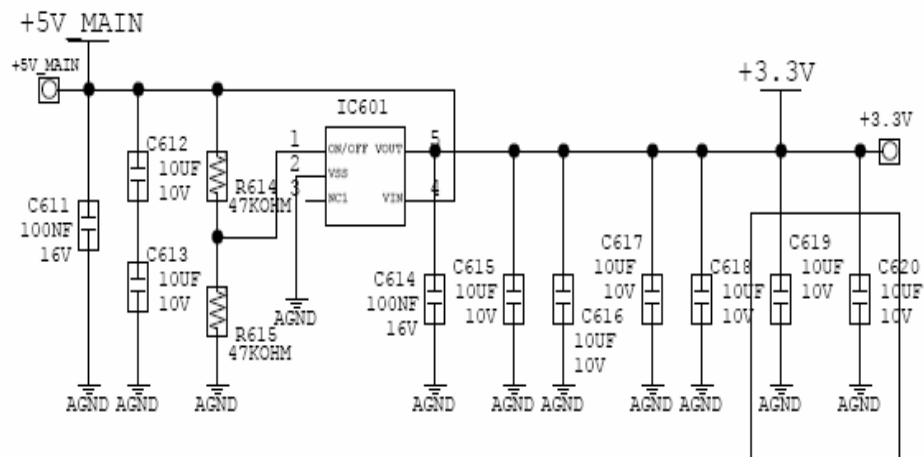
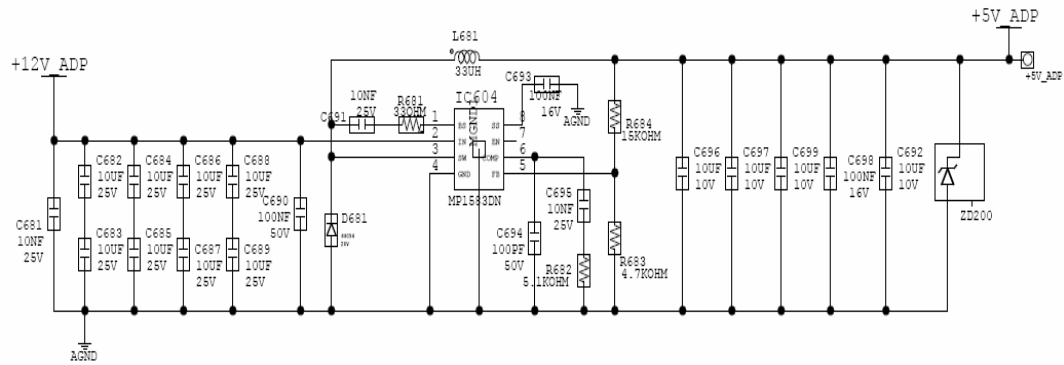
### 4-1. Troubleshooting

1. Set custom mode as follows before beginning a repair.
  - Resolution: 1920x1080
  - H-frequency: 67.5 kHz
  - V-frequency: 60 Hz
2. If the screen is blank, check whether the power cord is connected correctly.
3. The circuits to check:
  - When the raster does not appear: The Function PCB, Main PCB, Adapter.
  - When 5V is generated but a blank screen is displayed: IC604
  - When 5V is not generated: CN601
4. "Press the MENU button and hold down the, " (Enter, Source)" button for more than five (5) seconds to return the monitor to factory mode.

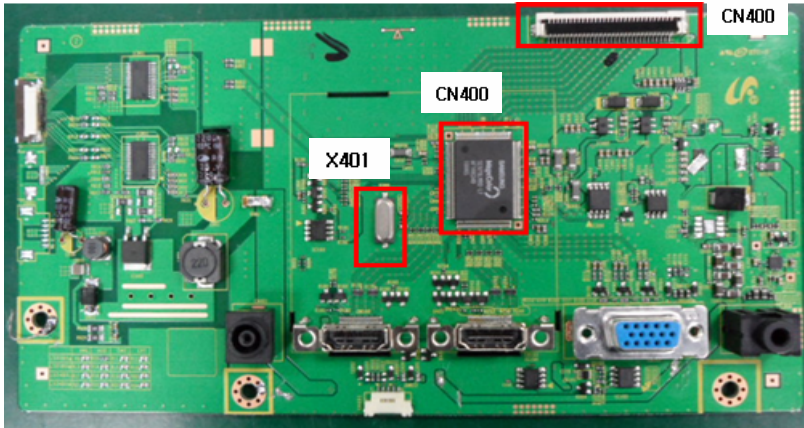
## 4-2. When the Power Does Not Turn On

Symptom	<ul style="list-style-type: none"> <li>- When turning on the Power button after connecting the power cable, the LED at the front of the monitor does not operate.</li> </ul>
Major checkpoints	<ul style="list-style-type: none"> <li>- When turning on the Power button after connecting the power cable, the LED at the front of the monitor does not operate.</li> <li>- Check the IC604 power fuse and the IC604 output power.</li> <li>- Check the connections for the CN601 and the Main board inside the monitor.</li> <li>- Check the Main board power part and also check whether there is any abnormal output at any of the other output terminals.</li> </ul>
	
Diagnostics	<pre> graph TD     A[Is DC 5V measured at pins 3, 5 of the IC604] -- Yes --&gt; B[Check the connection status for the function assy.]     A -- No --&gt; C[Check CN601 and the IC601]     A -- Yes --&gt; D[Is DC 3.3V measured at pin 5 of IC601 when pin 4 is DC 5V?]     D -- No --&gt; E[Check the circuits related to IC601.]     D -- Yes --&gt; F[Is DC 1.8V measured at pin 5 of IC602 when pin 4 is DC 5V?]     F -- No --&gt; G[Check the circuits related to IC602.]     F -- Yes --&gt; H[Check and replace the Mainboard.]   </pre>
Caution	Make sure to disconnect the power before working on the Main board.

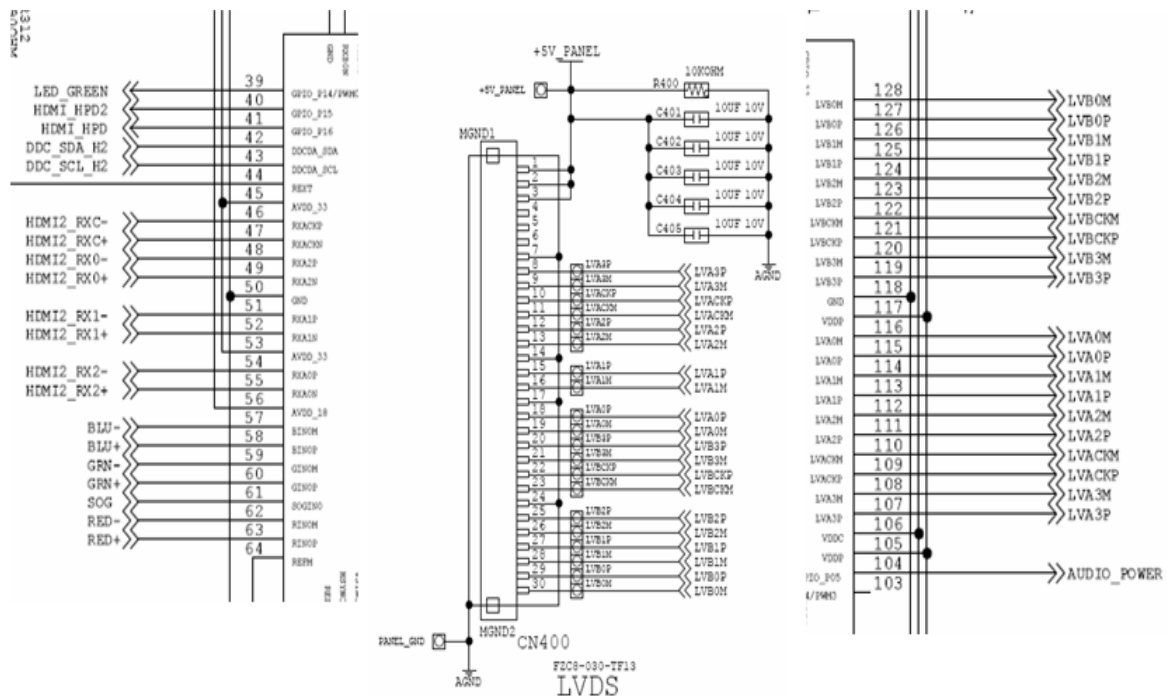
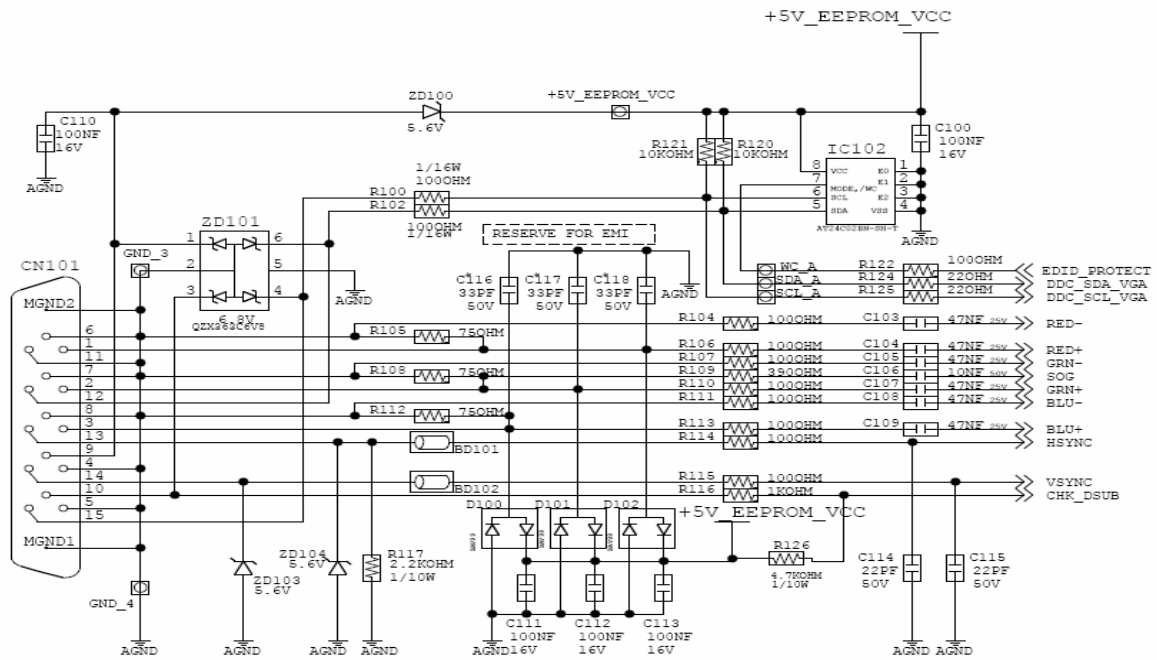
### 4-2-1. Circuit diagrams when the power does not turn on



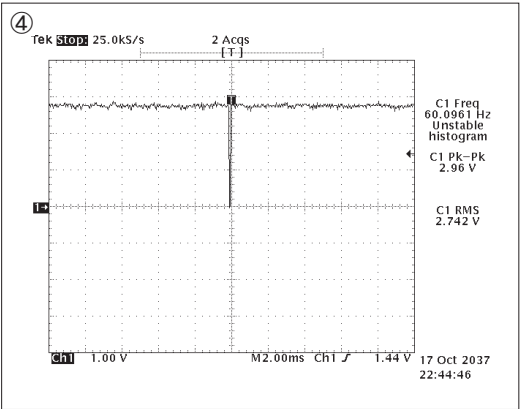
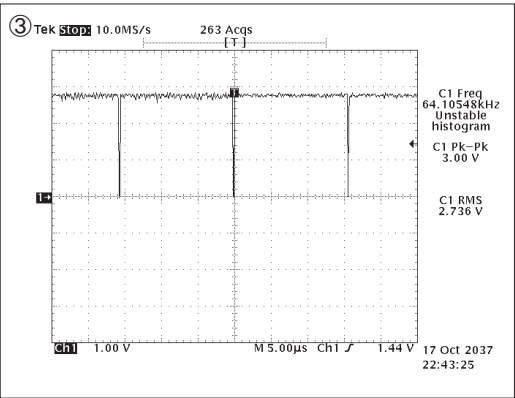
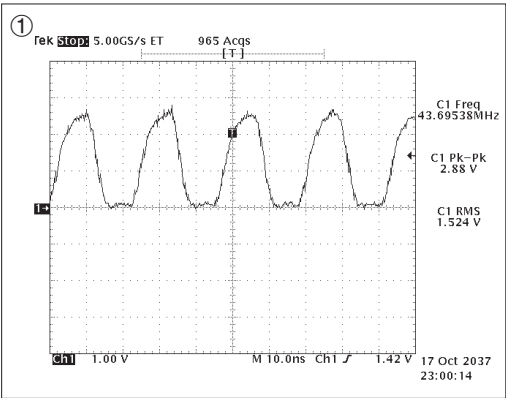
### 4-3. When the screen is blank (Analog)

Symptom	- Though the LED power turns on, the screen is blank when connecting the VGA cable.
Major checkpoints	<ul style="list-style-type: none"> <li>- Even though the LED power turns on, the screen is blank when connecting the VGA cable.</li> <li>- Check the D-sub cable connections.</li> <li>- Check whether the LVDS cable is connected correctly to the panel.</li> <li>- Check whether the lamp connector of the panel is connected correctly to the Main board.</li> </ul>
	
Diagnostics	<pre> graph TD     A[Check the signal cables and their connections.] -- Yes --&gt; B{① Is X401 oscillating correctly?}     B -- No --&gt; C[Check and replace the circuits related to X401.]     B -- Yes --&gt; D{② Do the RGB inputs appear at R106, R110, and R113?}     D -- No --&gt; E[Check input part]     D -- Yes --&gt; F{Do the ③ Hsync and Vsync waveforms appear at pins 32, 33 of IC400, respectively?}     F -- No --&gt; G[Check the circuits related to IC400.]     F -- Yes --&gt; H{Do output signals appear at pins 8 to 30 of CN400?}     H -- No --&gt; I[Check the circuits related to CN400.]     H -- Yes --&gt; J{Is DC 5V measured at pins 1, 2, and 3 of the CN400?}     J -- No --&gt; K[Check the +5V_Panel signal and the BL_EN signal.]     J -- Yes --&gt; L[Check and replace the panel.]           </pre>
Caution	Make sure to disconnect the power before working on the Main board.

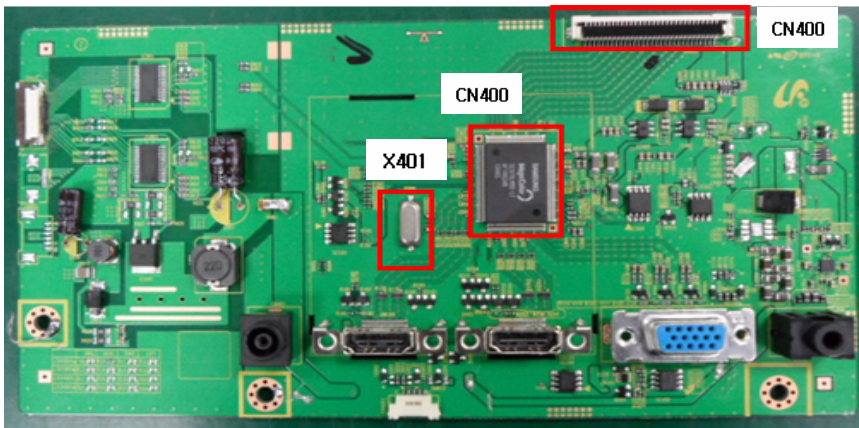
## 4-3-1. When a blank screen is displayed (Analog)



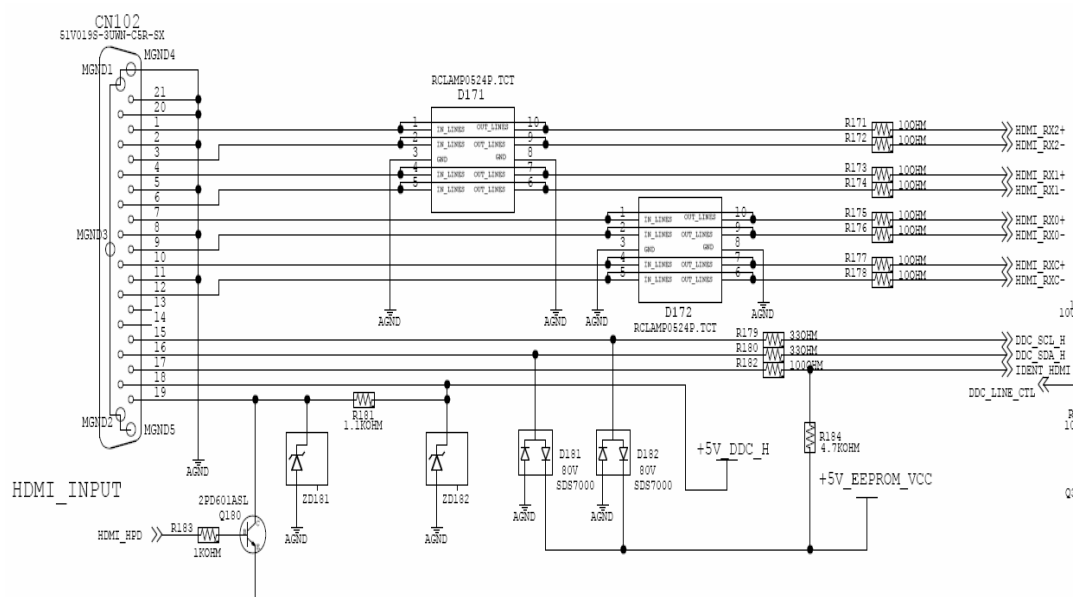
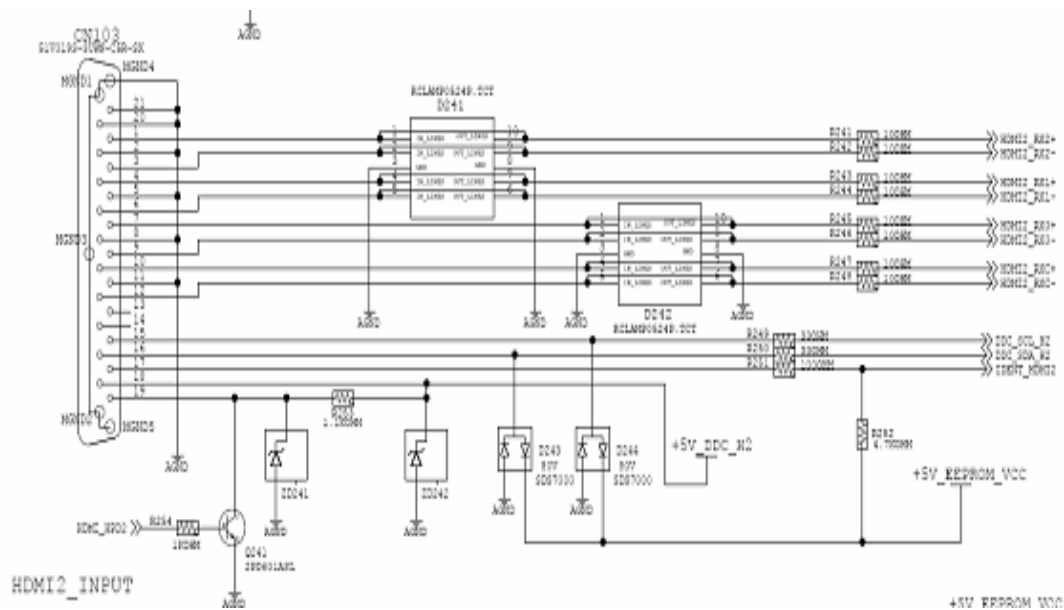
4-3-2. Waveforms when no screen is displayed (Analog)





#### 4-4. When a blank screen is displayed (HDMI)

Symptom	- Even though the LED power turns on, the screen is blank when connecting the HDMI cable.
Major checkpoints	<ul style="list-style-type: none"> <li>- Even though the LED power turns on, the screen is blank when connecting the HDMI cable.</li> <li>- Check the HDMI cable connections.</li> <li>- Check whether the LVDS cable is connected correctly to the panel.</li> <li>- Check whether the lamp connector of the panel is connected correctly to the Mainboard.</li> </ul>
	
Diagnostics	<pre> graph TD     A[Check the signal cables and their connections.] -- Yes --&gt; B{① Is X401 oscillating correctly?}     B -- No --&gt; C[Check and replace the circuits related to 401.]     B -- Yes --&gt; D{② Do the inputs appear at R171 to R176 and R241 to R246?}     D -- No --&gt; E[Check input part]     D -- Yes --&gt; F{Do output signals appear at pins 8 to 30 of CN400?}     F -- No --&gt; G[Check the circuits related to CN400]     F -- Yes --&gt; H{Can DC 5V be measured at pins 1, 2, and 3 of CN400?}     H -- No --&gt; I[Check the Panel EN signal and the BL_EN signal.]     H -- Yes --&gt; J[Check and replace the panel.]           </pre>
Caution	Make sure to disconnect the power before working on the Mainboard.

## 4-4. Circuit diagrams when a blank screen is displayed (HDMI)



## 4-5. Error Examples and Actions

Error Appearance	Symptoms and Actions	Remarks
	<p>Symptom: HDMI signals are not recognized.</p> <p>Cause: This error occurs because the PC cannot recognize the mode information since the HDMI DDC is not input to the monitor.</p> <p>Action: Input the HDMI DDC.</p>	*On how to input DDC, refer to the training manual.
	<p>Symptom: A full white screen is displayed regardless of the signals when turning on the monitor.</p> <p>Cause: This error occurs when only lamp power is supplied and the video signals are not input to the panel due to an LVDS cable connection error.</p> <p>Action: Replace the LVDS cable or connect the cable correctly so that the video signals can be supplied to the panel.</p>	* A Full White pattern is a feature of a TN panel when no video signals are supplied.
	<p>Symptom: When connecting the DVD, noise occurs on the screen.</p> <p>Cause: The HDCP key is not inserted.</p> <p>Action: Enter the HDCP key. (See page 4-17.)</p>	

## 4-6. Adjustment

### 4-6-1. Service Adjustment Conditions

#### 1. Precautions before a Service Adjustment

- 1) Check whether the devices for the service adjustment are operating normally.
- 2) Secure a space that is sufficiently wide for disassembling the monitor.
- 3) Prepare a soft mat on which the monitor will be disassembled.

#### 2. Entering Service Mode

Entering: Menu → Brightness 0 → Contrast 0 → Hold down the Enter button for five (5) seconds.

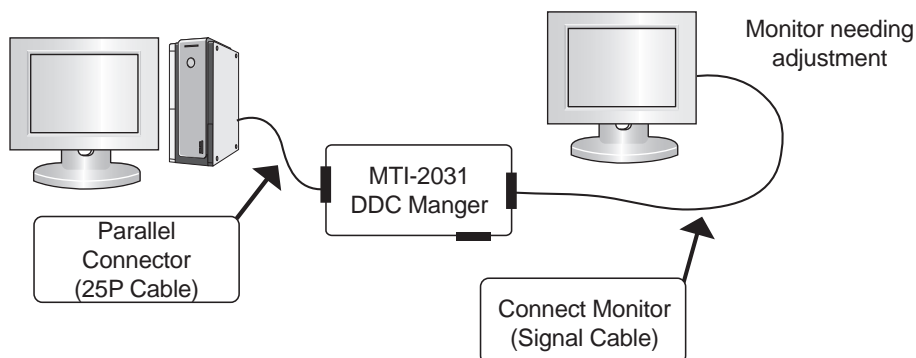
Exiting: Power OFF → Power ON

#### 3. Basic Service Items to Perform after Replacing a Board

- 1) Check the PC color adjustment status.
- 2) Input DDC (input both of Analog and HDMI).
- 3) Check whether the appropriate MCU code for the model is input.
- 4) Hard power the monitor off after entering service mode and performing a reset.

#### 4. DDC EDIT Data Input

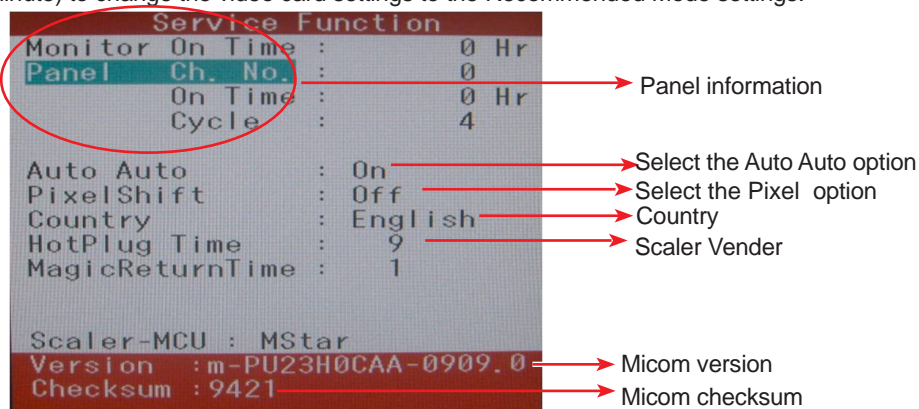
- 1) Use when updating the AD board code.
- 2) Download the WinDDC program, DDC Input program, and Hex and DDC files appropriate to the model through the Quality Control department of Samsung Electronics. Install the jig and input the data, as shown in the figure.



## 4-6-2. Service Function Specifications

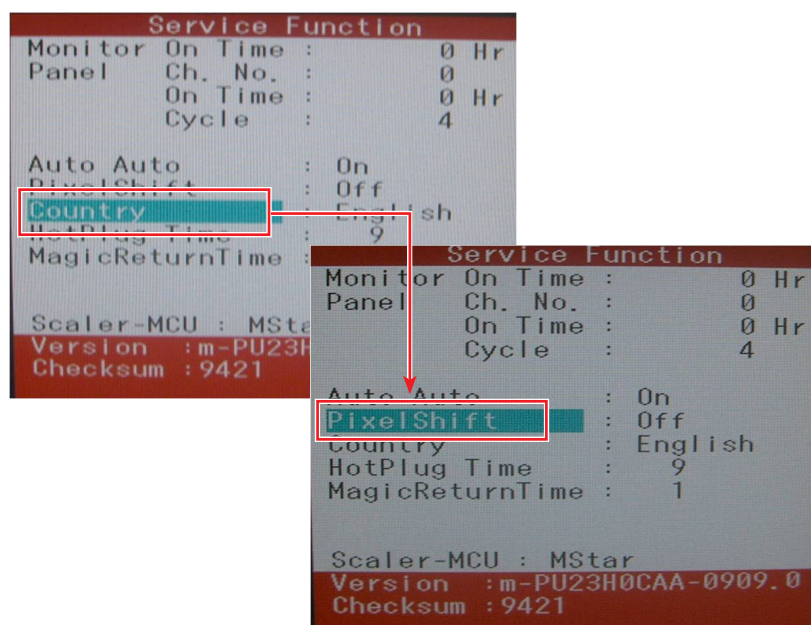
### ■ Checking the Code Version

1. Check the MCU code version and checksum after entering SVC Mode.
2. Entering SVC Mode
  - Adjust the Brightness and Contrast values to 0.
  - Hold down the Enter button for five (5) seconds.
  - The SVC Function OSD is displayed.
  - To exit the SVC Function, turn the power off.
3. Safe Mode
  - When the input signal is higher than the supported frequency of the product, safe mode gives users some time (one minute) to change the video card settings to the Recommended Mode settings.

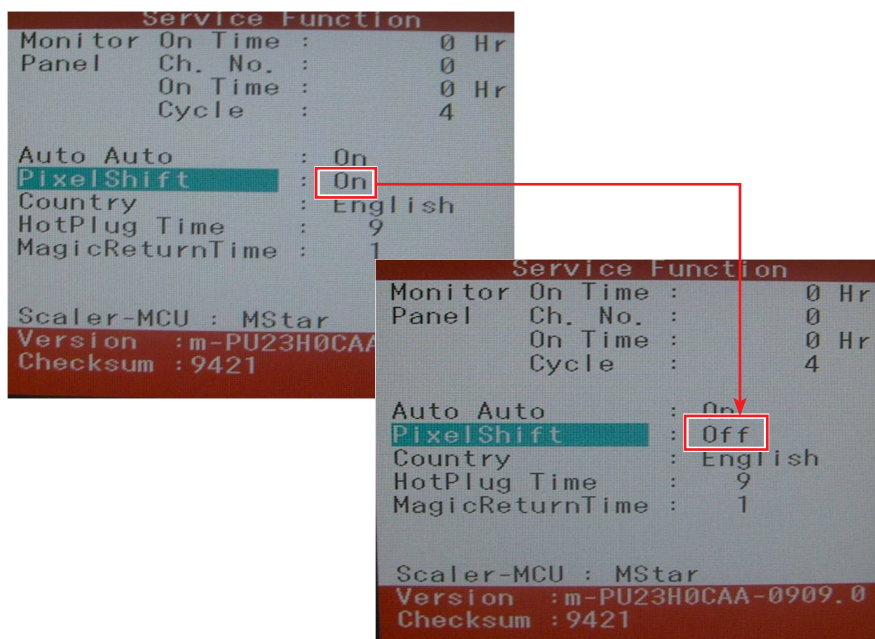


### ■ Service Mode (Moving around)

1. Press the + button to move to other items.

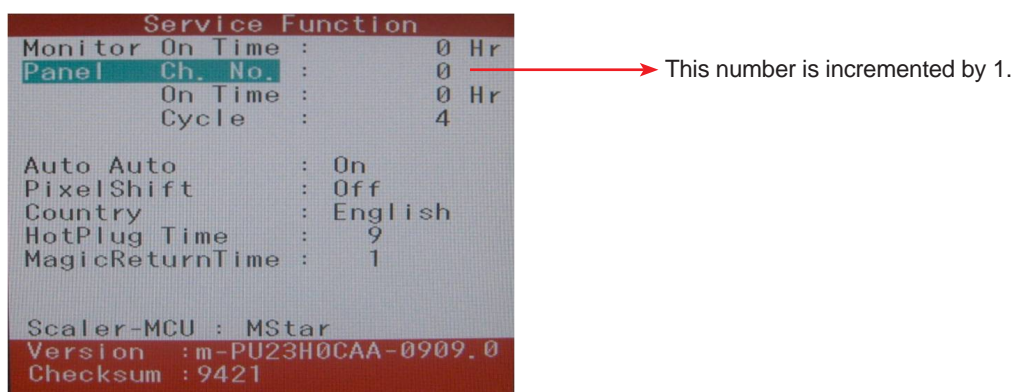


2. Press the - button to change the setting to On or Off.



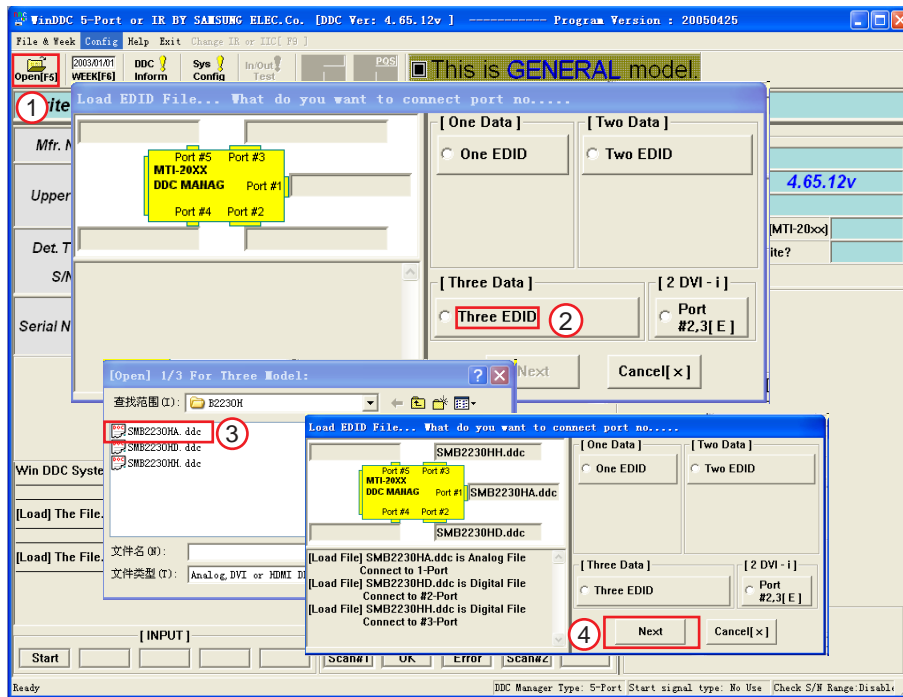
#### ■ When replacing the panel

After replacing the panel, move to the Panel item and hold down the Menu button for five (5) seconds. The Ch. No is incremented by 1 and then both the On Time and Cycle are set to 0.



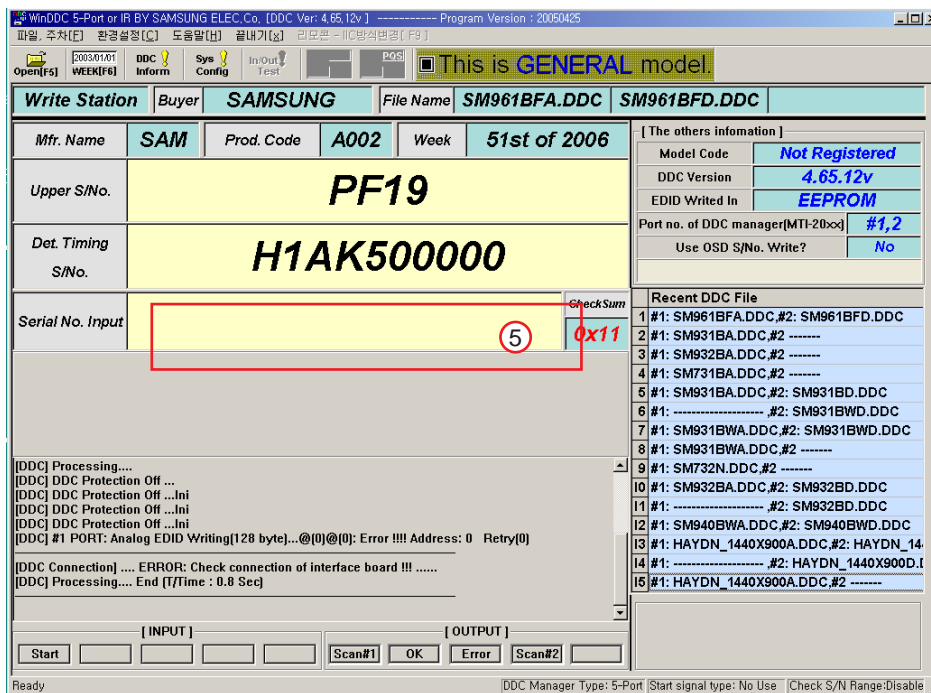
#### 4. Troubleshooting

### Inputting the DDC Data



Use the DDC Manager MTI-2050 version or later.

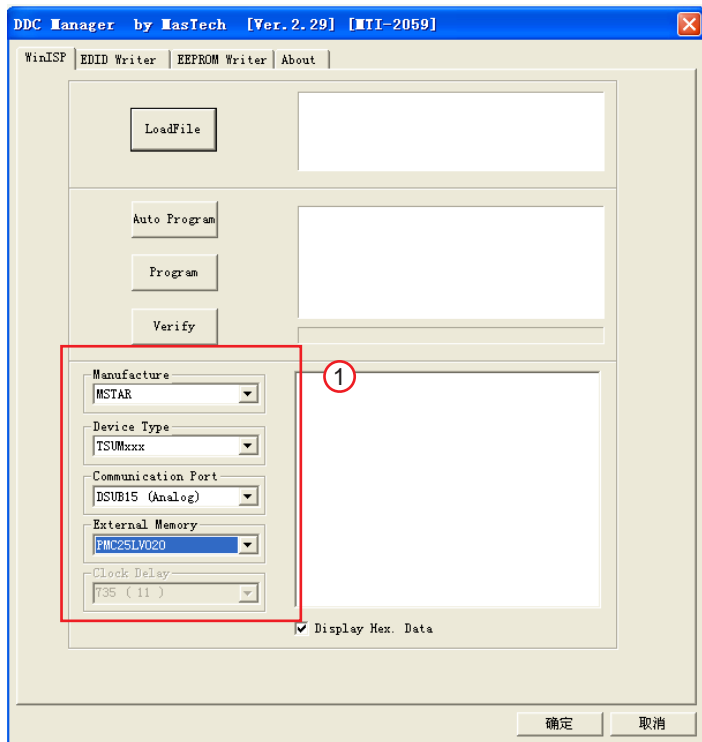
- 1) Click the Open [F5] icon.
- 2) Select Three EDID .
- 3) Select one DDC file, do it three times.
- 4) Click Next.



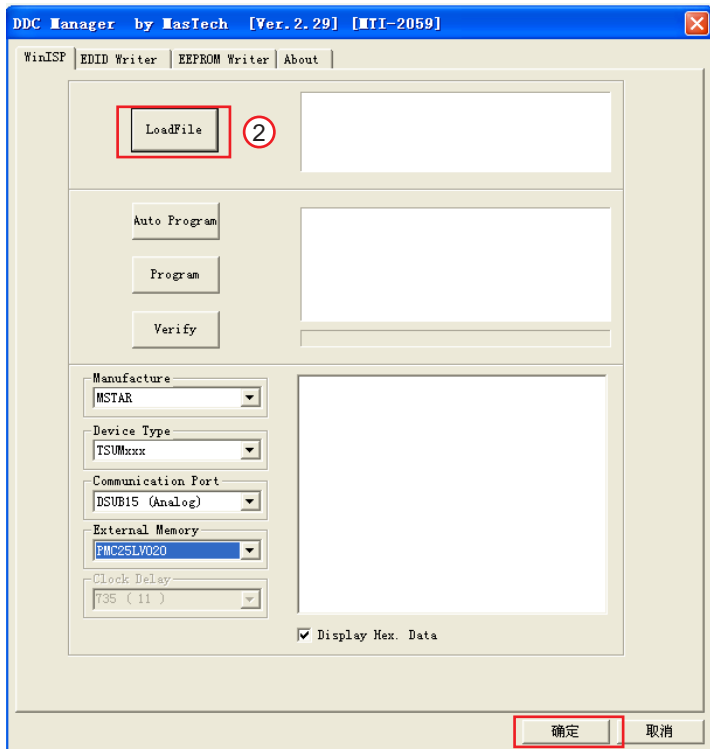
- 5) Enter the serial number and then press the Enter button

※ When inputting one data , select one EDID at steps 2 .

## ■ Inputting the MCU Data

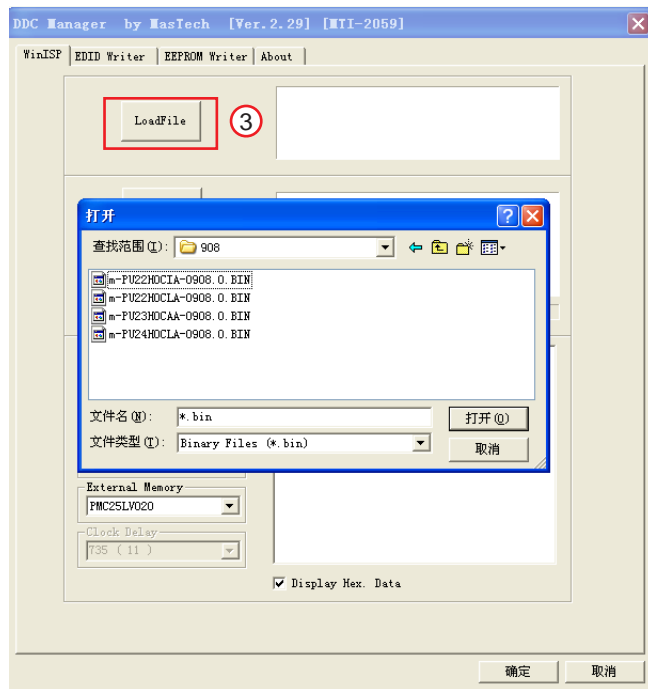


- 1) Check the following options.
- Manufacture: MSTAR
  - Device Type: TSMxxxx
  - Communication Port: DSUB15 (Analog)
  - External Memory: PMC25LV020

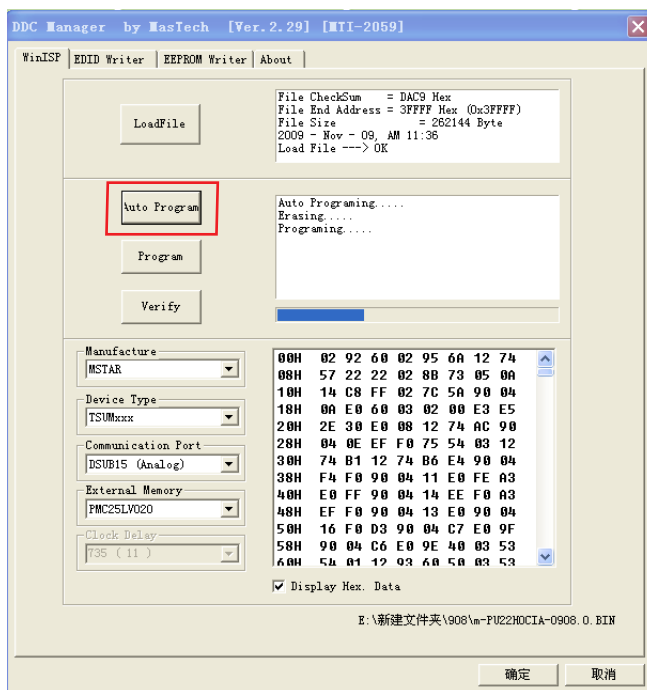


- 2) Click the LoadFile button, select an MCU code file, and then click the Open [O] button.

#### 4. Troubleshooting

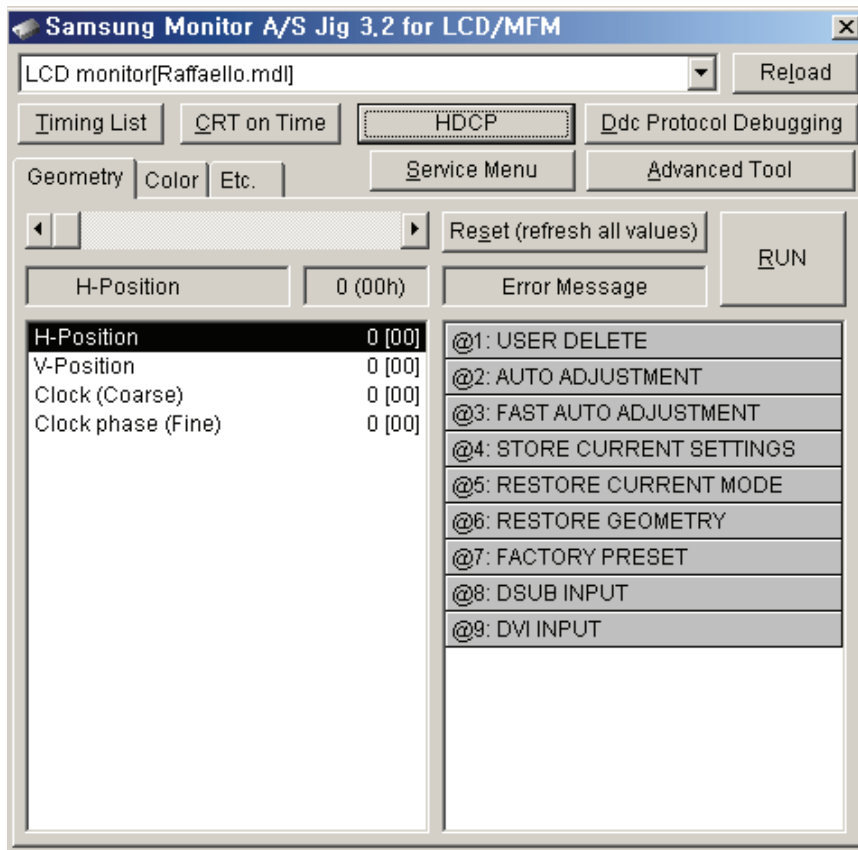


3) Click the Auto Program button.

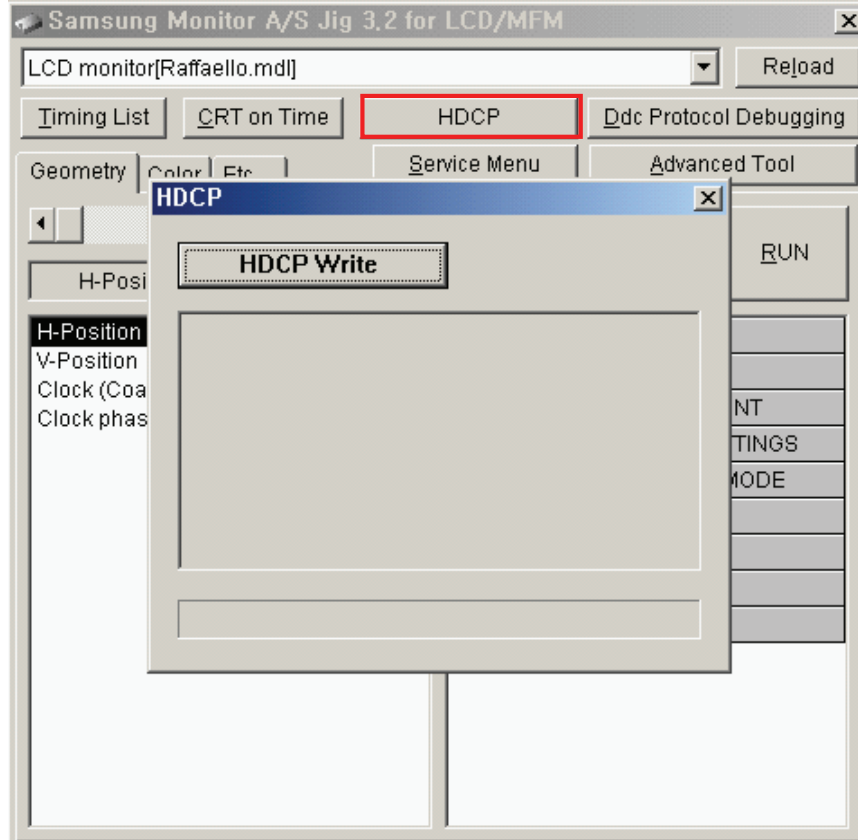


4) When programming and verification are complete, hard power the monitor off and then on again.

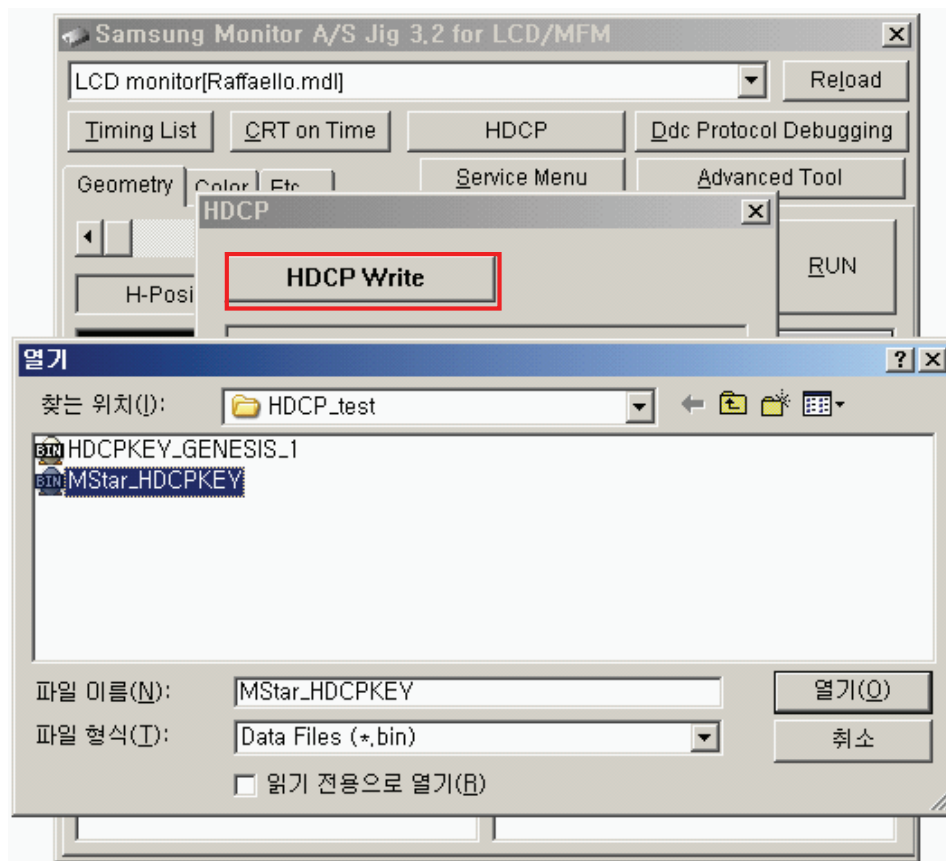
## ■ Inputting the Code (HDCP)



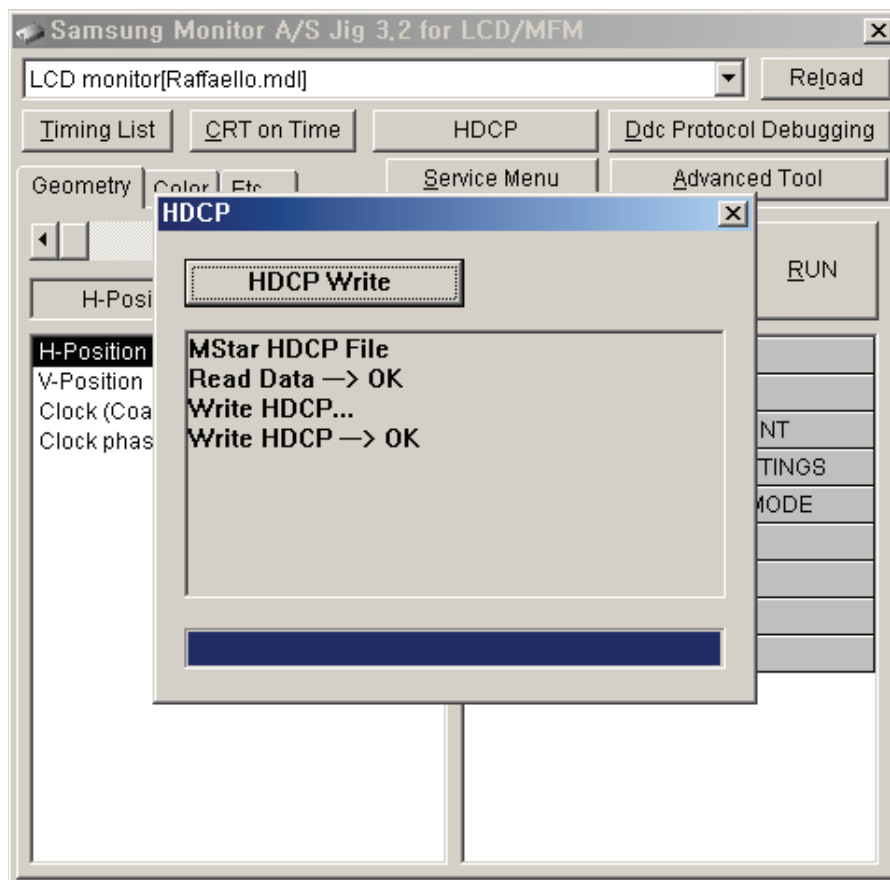
1. Run the service.exe file.



2. Click the HDCP button.



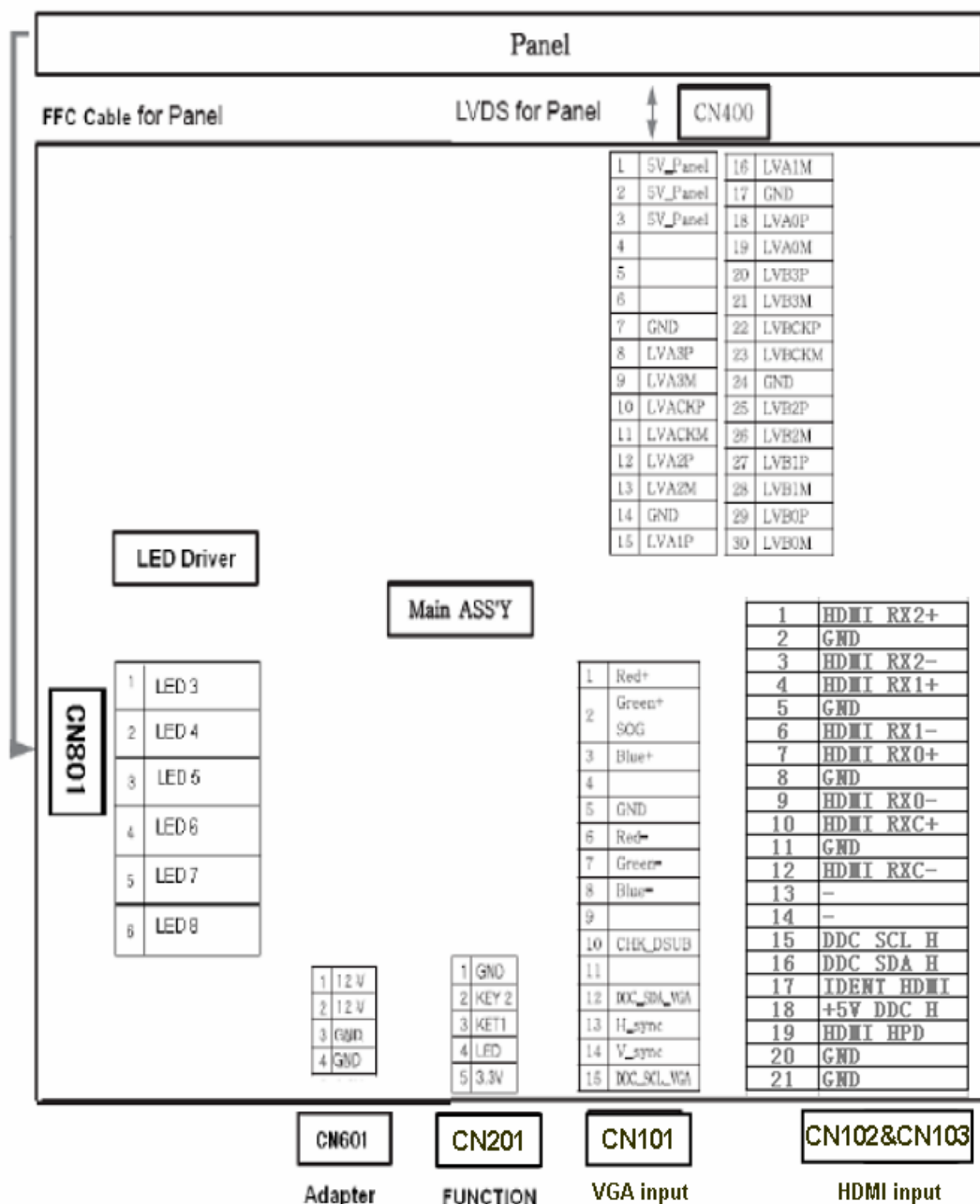
3. Click the HDCP Write button and select MStar\_HDCPKEY.



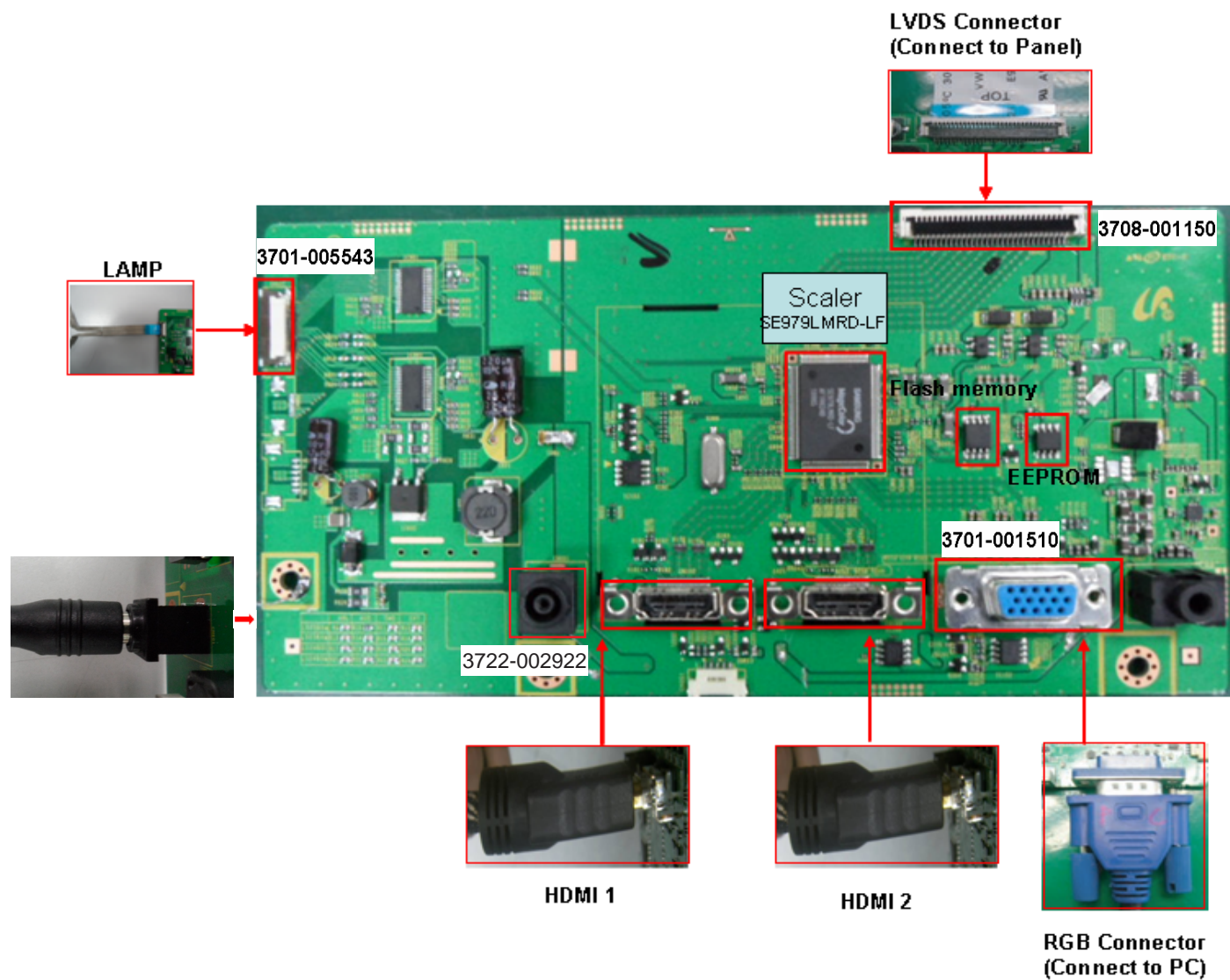
4. Inputting the HDCP key is completed.

## 6. Wiring Diagram

### 6-1. Wiring Diagram - Main Board



## 6-2. Wiring Diagram - Main Board



## 6-3. Connector Functions

Connector	Functions
CN101 ↔ CN801	Supplies 12V from the adapter to the main board and transmits the PWM output from the main board to the LED driver. *When a problem occurs: The No Power and Blank Screen errors may occur.
RTN1 ~ RTN4	Transmits the lamp current (60mA ~ 70mA) generated in the inverter to the lamp of the panel. * When a problem occurs: The Blank Screen error may occur.
CN601	Transmits the input power of 90 to 263V to the adapter. * When a problem occurs: The No Power error may occur.
CN100	Connects the function board. * When a problem occurs: The No LED screen and Function failure errors may occur.
CN200	VGA signal input terminal * When a problem occurs: The No RGB output error may occur.
CN400	Transmits the LVDS signals from the main board to the panel. * When a problem occurs: The Blank screen and No Power errors may occur.

## 6-4. Cables

Use	LVDS 30P FFC cable		
Code	BN96-12453N(BX2450/BX2450N/BX2450L)	BN96-12453M(BX2350)	BN96-12453J (BX2250/BX2250N)
Photo	